

**COMPARISON OF THE IMPACT OF METACOGNITIVE AND
METAREPRESENTATIONAL PROCESSING STRATEGIES ON STUDENTS'
READING COMPREHENSION PERFORMANCE IN THREE GOVERNMENT
SECONDARY SCHOOLS, ZARIA**

BY

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MARCH, 2014

DECLARATION

I hereby declare that this study is an original work of research conducted by me. To the best of my knowledge it has never been presented partly or wholly anywhere for the award of a higher degree in any form. Information derived from published or unpublished work of others has been acknowledged in the text.

ALTI Kasim

CERTIFICATION

This dissertation entitled “Comparison of the Impact of Metacognitive and Metarepresentational Processing Strategies on Students’ Reading Comprehension Performace: A Study of Three Schools in Zaria”, by ALTI Kasim, meets the regulations governing the award of the degree of Doctor of Philosophy (Teaching English as a Second Language) of Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

To my late parents who embody everything that thorough education is about.

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ABSTRACT

This study compared the impact of metacognitive and metarepresentational processing strategies of students' English reading comprehension. Three schools were involved (Aminu, Bomo and Kwangila Government Secondary Schools). The study sample consisted of 450 SS II students (boys and girls). A quasi-experimental study was undertaken involving Solomon 4 group design. The subjects were assigned two treatment groups of 150 each, metacognitive group (Aminu Secondary School), and metarepresentational group (Kwangila Secondary School). Government Secondary School Bomo was used as control group with 150 sampled students. Metacognitive group was exposed to metacognitive processing strategies of reading comprehension, while metarepresentational group was treated with metarepresentational processing strategies for 12 weeks, per group. The impact of each group's reading comprehension processing strategies according to low, middle, and high levels was compared to the other. This was based on phases I (no treatment), II and III of the treatment period. The findings showed that both metacognitive and metarepresentational processing strategies positively facilitated students' reading comprehension because they performed higher than the control group across phases. Metarepresentational group performed higher than metacognitive group because of differential treatment impact. It was also found that metarepresentational group performed higher on critical level of reading comprehension because it generated contextually expansive comprehension processing among students. The study, therefore, recommended that both metacognitive and metarepresentational processing strategies of teaching and learning of reading comprehension process be included in secondary schools with emphasis on metarepresentational strategies. The two strategies boosted students' comprehension processing and in turn, impacted on their reading comprehension performance.

DEFINITION OF TERMS AND EXPRESSION

Introduction

Below are the definitions of terms used for the purpose of this study.

Associative Net Priming: The effects affecting the time needed to recognize a target word or expression. The presented target word would be preceded by another word referred to as the “primes. If the prime word semantically shares semblance with the target word, response time is faster (e.g. presume preceding presumption).

Associative Net: This is a range of psychologically connected items that feature in the mind forming relation of word meanings.

Attandation: This is the time allocated to particular word or expression during reading comprehension.

Bottom-up: A phenomenon in which the procedure begins with the smallest functional units in structure and proceeds to combine these into larger parts. This is opposed to top-down which begins with the analysis of the high – level units down to the smaller unit progressively.

Context- Based: The process of generating meaning of word/expression with regard to particular situation.

Context Sensitive: The occurrence of words and expressions only within a particular situation.

Contextual Implication: The cognitive effects of expression on an individual.

Critical: Critical comprehension is the global or comprehensive judgment about some aspects of the text.

- Data Driven:** Any associated observations and inferences based on variously identified linguistic behavior, knowledge, abilities, process and patterns in real life linguistic situations.
- Frame Analysis:** The process of constructing meaning based on projected anticipation. For example, when the projected concept align with the writer's meaning to produce correspondence between the writer and the reader, the process is called frame analysis.
- Inference:** The meaning involving more than a literal understanding. It is based on material that is in the text but not explicitly stated.
- Interpretive Comprehension:** The process of learners' understanding of the passage and developing their own knowledge of the idea in a logical way for making conclusion.
- Knowledge Node:** A particular expression used for understanding a text.
- Lexical Node:** The connection of a word with other words of similar semantic content.
- Literal Comprehension:** An understanding of the straight forward meaning of the text, such as facts, vocabulary, dates, times and locations. Questions of literal comprehension can be answered directly and explicitly from the text.
- Metacommunication:** The written language and communication with involving comment in achieving meaning and what they ought to be. For example, "you should have said...." or "I can't understand the point you want to convey".

- Meta-linguistic:** The overall relation of linguistic system to other system of behavior in associated contexts or situations.
- Metacognition:** A level of thinking that involves active control over the process of mental activity that is used in learning. It entails planning, monitoring and evaluation of comprehension process.
- Metapsychological:** The higher level mental analysis that relates to a particular object of concern.
- Metarepresentation:** The ability to think by mentally representing a particular state of affairs regarding what the writer means based on the written text. It is the process of reflecting what the writer means by the use of the writers text.
- Mutual Manifestness:** The ability of both the writer and reader to mentally figure out and represent an expression as true or probably true.
- Observability Constraints:** Conditions involving experiential monitoring of action, cause or effect. This is observable in stimuli response condition but not observable in condition – action production system in comprehension.
- Ostensive Stimuli:** It is a communicative cue for achieving meaning. For example, a written linguistic expression is a communicative sign meant for comprehension and possible response. For example, a written expression like, *social intolerance is a major problem*, is a written material meant to communicate and elicit response by “processing the material”.

Pragmatic Metarepresentation: The use of inference by the reader to figure out meaning while comprehending a text.

Predictiveness: The capacity to extract one's own motivational demand to learn a particular item. For example, predicting whether one will be able to retain a particular item of knowledge in memory say for two weeks or three or more.

Production System: A form of knowledge presentation that depends on conditional need.

Recursivity: The repeated application of sequence of syntactic attribution of mental state in comprehension. For example, Malik knows that Lailah knows that her friend knows that her father has gone to the dinner.

Relevance Theory: A linguistic communication theory, proposed by Dan Sperber and Deidre Wilson (1986), that takes into account implicational relevance. It argues that the reader or hearer will search for meaning, in any given communication situation, that fits the reader's or hearer's expectation of relevance.

Reorganization: A literal understanding of the text; that is based on considering information from various parts of the text and combining them for additional understanding.

Retrodictiveness: The ability to judge or assess a situation after the facts of having made decision have emerged. For example, to regret an action,

say buying a mobile phone, or to justify an action or decision say selling one's car.

Schemata/Frame: A mental structure in which knowledge of word/expression is organized based on slot allocation. These slots are termed as the frames. The frames are activated to check for required meaning. For example, I like PZ Street because of the *banks*. The schemata will be used to activate the frame slot of banks. *Cash bank* slot would be activated because of the word "street" instead of river bank.

Semantic Net: The possible meaning components of a particular lexical item or expression. For example, semantic net capturing the meaning of 'girl' can be, young, female and human.

Stabilization Process: A steady spread of the activation of other propositions (ideas) to search for the one that most appropriately combines with background knowledge to achieve meaning.

Structures of Expectation: The anticipated possibility of required information from the writer or speaker. It is upon this that communication of intended proposition, by the writer and comprehending it, rests.

LIST OF ABBREVIATIONS

- TC** - Thought Content - is the simulative activities certain in mental percept.
- PA1** - First Order Propositional Attitude – this is the original proposition attributed to the writer.
- PA2** - Second Order Propositional Attitude – the descriptive proposition attributed to the writer.
- WAEC** - West African Examination Council – this is an high school examining body meant for West African sub-region.
- NECO** - National Examination Council – this is an high school examining body operating in Nigeria.
- SRCPD** - Strategic Reading Comprehension Processing Development – a model for reading comprehension processing development among learners develop by Alti Kasim

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

In present day knowledge society and knowledge economy, the role of English language and communication skills is becoming more positively obvious. Text comprehension is one important aspect of language and communication skills. To a large extent, children and adults learn in and out of school from written texts. Human life is generally dependent on reading and comprehension of reading materials, for its growth and sustainability. In this regard, insight is needed into the processes underlying text comprehension. This is why the present study aspires to compare the impact of metacognitive strategies and metarepresentational strategies on reading comprehension performance of students with a view to finding out the comprehension construct that impacts the more on students' comprehension performance.

Metacognition refers to a kind of thinking that involves active control over the mental process that is used in learning situations. This entails planning, monitoring and evaluating the progress of reading comprehension activity. Metacognition also refers to "one's knowledge concerning one's own cognitive processes and products or anything related to them" (Flavell, 1976, P. 232). Metacognition, therefore, includes the active monitoring and consequent regulation of the information processing activities.

Metarepresentation refers to the ability to figure out or represent a particular idea regarding what the writer thinks by representing that state of affair via written texts. It is the process of mental picturing of what a writer means by the use of the

writer's texts. In text comprehension, in order for the writer and reader to assess their mutual background knowledge, the two must be able to represent each other's thought, that is, they must be able to metarepresent. Metarepresentation is seen as a picturing of an intended meaning: a higher – order representation with a lower – order representation embedded within it (Wilson, 2002). Thus the two concepts, metacognition and metapresentation, could be important in text comprehension processing. The aim of the study is to bring down metarepresentational and metacognitive concepts and strategies to the level of secondary school teachers of reading comprehension so that they can effectively operate.

The conventional teaching processing of comprehension material restrict itself to mere reading of text and asking the students questions on the text. Students are not taught how to use strategies to process and understand texts meaningfully. In most cases only more information consumption was the target of reading comprehension. Students' critical thinking is never given importance.

The present study has drawn its inspirations from various factors. The woeful failure, with unflinching regularity, of secondary school students in West African Senior Secondary Certificate Examination (WASSCE) and Senior School Certificate Examination (SSCE). A study of students' reading comprehension ability from the perspectives of metacognitive and metarepresentational capacities could help find effective ways of enhancing language proficiency in the area of teaching and learning. This could be done by comparing the results of subjects exposed to metacognitive strategies of reading comprehension and those exposed to metarepresentational strategies of reading comprehension with a view to finding out the most effective. This

could help in preventing students' mass failure at secondary school levels in Nigeria because they may help improve the comprehension processing capacity of students if adopted by secondary school English language reading teachers in the classrooms. It could further provide a robust foundation for both students' future academic pursuit and real life situation communicative competence as they will become lifelong proficient readers.

A lot of studies have been devoted to structural reading comprehension alone.. Not many studies were undertaken to draw insight from the cognitive processes underlying text comprehension (Perfetti, Chin-Lung & Smalhofer, 2008). Where such studies were undertaken, the concentration was always on one aspect: metacognitive, with usually one framework and limited empirical explanation (Proust, 2007). The present study, therefore, takes the two constructs (metacognition and metarepresentation) in order to compare in depth, how each impacts on text comprehension, using different frameworks such as cognitive and pragmatic theories in order to allow for generalizations.

Text comprehension instruction and assessment across scholarly institutions tend to generate some disparity between the test makers and test takers' interpretative norm. By interpretative norm, is meant the test reflects on one set of norms and the tasks demand quite another. This clearly shows that the test makers in comprehension do not consider the varying ways of interpreting text which are ultimately grounded in the students' distinctive patterns of ethno-cultural, experience, language and thought (Hill, 1992). This gap inspired the present study in metarepresentational processing strategies as compared with metacognitive processing strategies.

Again, teaching of reading comprehension has not been given the required attention. The teacher- training institutions do not include it at primary school (Oyetunde, 2009). This gives a poor background effect, the consequence of which is grossly noticed among secondary school and tertiary students. Students across these levels of education are not inclined to learning to comprehend texts and some do not even know how to read and comprehend proficiently.

Given the educational developments such as the Dakar Declaration on Education for All (EFA, 2000), the Millennium Development Goals, and the Universal Basic/Primary education (UBE) Programme (Olaofe & Masembe, 2006), a study on comprehension processes is needed. This is to enhance the teaching and learning approaches that would develop the human comprehension faculties in order to facilitate text comprehension and English language proficiency among students.

Olaofe and Masembe's (2006) Clause Relational Approach to reading in advanced and tertiary institutions provides learners with sufficient insight into reading comprehension strategies and practical resources for improving reading comprehension. Empirical explanation of the comprehension processes that account for those strategies and the resultant impacts on text comprehension and interpretation is not recorded. Underlying processing of text comprehension is what the present study seeks to achieve.

Generally, comprehension is the aim of reading any text. This is because once an individual can read a text and comprehend it, that person would be able to cope with not only the academic demands of schooling (Oyetunde, 2009), but also different

perspectives of their lives. Text comprehension, thus, serves as a communication skill needed for a life time growth and sustainable development of an individual, because it helps both within and out school real-life situation. This is another perspective that motivated the present study. It aims at boosting reading comprehension through the study of the effectiveness of metacognitive strategies and those of metarepresentation.

Again learning to read is one of the crucial endeavors children and adults need to accomplish in school because it is the basis for most of the academic achievements and endeavours (Stevens, Robert, Slavin & Ann, 1991). A child or adult with the ability to read and comprehend is predicted to succeed in a given academic enterprise. On the contrary, a person who is expected to have acquired reading and comprehension skills, but is still deficient in comprehending any text material, is apparently considered to suffer academic failures (Maria, 2008). Invariably, learning in any discipline depends squarely on spending much time reading and comprehending information presented in the text. Where comprehension fails, learning also fails. In that case, text comprehension plays a vital role in achieving literacy. Exploring and comparing the process of text comprehension via metacognitive and metarepresentational strategies and comparing their impact becomes relevant in this direction. Teachers can adopt the recommendable one by the present study in order to help students out of reading comprehension problems. It could also help teachers to teach and test reading effectively and not to test reading alone as the present status quo obtains in Nigerian schools.

Human ability to employ metacognitive and metarepresentational capacities in comprehending and interpreting text materials appropriately is indispensable for

successful communication. Therefore, text comprehenders, it is believed, need to acquire the metacognitive as well as metarepresentational strategies to use and understand text materials in the same manner that they acquire other linguistic strategies in language acquisition process. This involves a lot of processes that require a study such as the present one; especially by examining various theories and frameworks. The result would, therefore, indicate how complex the study of human text comprehension is in order to justify that it is a worthwhile object of linguistic investigation.

Another aspect that motivated the present study is that communication is a form of cooperation that seems particularly advantageous for humans since they depend on their cognitive resources. Instead of being restricted in one's knowledge to the products of one's own experiences and thinking, communication makes experiences and thinking available by proxy: through communicative representation (Sperber, 2002). It means that proxy representation of experiences and thinking are embodied in both the text and the text reader's interpretation of the text material. The level of abstraction at which the intention of the text via its meaning, and the reader's identification of that intention is obviously delicate. This is because it involves complex processing activities on the part of reader. The present study finds this abstraction of comprehending text both stimulating and illuminating. The study thus is encouraged by the nature in which this type of abstract involvement of both the meaning of the text and the reader's processing efforts in finding and achieving meaning could be susceptible to particular problems. These could include misinformation, deception, and misguidance in communicating with a text material.

Metacognitive or metarepresentational processing strategies might have impact on the comprehender's identification and protection from dangers of deception by systematically being mistrustful where and when necessary in reading a text. The reader can pose probing question to the text in order to find hidden meaning of the writer. The same applies to being trustful because communication is advantageous only if is paired with mechanisms that ensure the proper calibration of trust (Sperber, 2002). It is even more advantageous, if having been protected from the hidden meaning of text and without being over protected, the text comprehender can penetrate the text's deep meaning and uncover the real message.

1.2 Statement of the Problem

Text comprehension performance is generally poor among secondary school students. Teachers at the secondary school do not teach comprehension or teach comprehension without the knowledge of the processes involved. Reading comprehension lessons tend to test comprehension, blindly, instead of teaching it. Learners, therefore, end up unable to process and understand reading materials appropriately. In that regard, there is need for empirical study that will guide teachers to teach and test comprehension (Hill, 1992).

Learning and examination failures in English language are mostly due to comprehension processing problems (Ludo and Charles, 2008). Students' inability to process and comprehend subject matter lead to total failure in reading comprehension and the general language learning and performance. Successive students' mass failure in

West African Council Examination in English Language could be linked to inability in comprehension processing.

What is evident from researches by cognitive comprehension processing experts (Proust, 2007; Kinstch, 1986; Hill, 1992; Vanden Brock, 1996) is that reading comprehension problems have been accentuated by concentrating on testing reading. Reading comprehension solutions that would be adequate to the reading comprehension problems have not been developed. Excessive emphasis on structural solutions to reading problems have left out the processing problems.

Teaching and learning of reading comprehension have never come to ground level because of the notable lack of satisfactory comprehension processing tools at all levels of language learning. This leads to students' poor processing of text and consequently poor or lack of comprehension. Many school leavers cannot easily read, process and understand simple text materials meaningfully.

Therefore, high demand for these reading comprehension strategies proves obvious. This is why the present study compared the impact of metacognitive and metarepresentational abilities on students' reading comprehension performance. There is the need to investigate reading processing strategies that could assist students' effective processing and meaningful understanding of text across contexts.

1.3 Purpose of the Study

The purpose of the study is to compare the impact of metacognitive and metarepresentational strategies on students' reading comprehension performance.

- (1) the impact of metacognitive ability on students' text comprehension.
- (2) whether or not metarepresentational processing strategies could have positive influence on students' text comprehension;
- (3) the one that has more impact: metacognitive processing strategies or metarepresentational processing strategies; and
- (4) the reading comprehension level on which the strategies impact the more.

1.4 Research Questions

Below are the research questions raised for the study.

- (1) What is the difference between the reading performance of students taught using metacognitive and conventional comprehension processing strategies?
- (2) What is the difference between the reading performance of students taught using metarepresentational and conventional comprehension processing strategies?
- (3) Which processing strategy has more impact on students' reading comprehension performance?
- (4) On which level of reading comprehension performance does the strategy impact the more?

1.5 Research Hypotheses

Below are the null hypotheses for the research. These would be tested at the end of research analysis.

- (1) There is no significant difference between the reading performance of students taught using metacognitive and conventional comprehension processing strategies.
- (2) There is no significant difference between the reading performance of students taught using metarepresentational and conventional comprehension processing strategies
- (3) There is no significant difference in the level impact of the strategies on students' reading performance
- (4) There is no significant difference in the level impact of the strategies on any reading comprehension level.

1.6 Significance of the Study

This study could be of immense importance to the teachers of English language, students, curriculum planners, examining bodies, textbook writers, educational administrators and possibly parents. Thus, the study is expected to be of great importance to the above mentioned category of potential beneficiaries, researchers and other interested bodies in the field of language and communication studies. Therefore, the relevance of the study to these groups of people is discussed in this section.

Teachers of English Language need the result of the present study. This is because an important aspect of language (text comprehension processing) is explored using diverse theoretical frameworks that account for each stage of text processing and comprehension. This is done via the constructs of metacognitive and metapresentational

disposition. The effort has the potential to help teachers in their choice and emphasis, regarding the two constructs, in planning and presenting their lessons. As a result of this choice, teaching/learning materials appropriate to the students' comprehension ability will be selected and used for reading comprehension lesson.

The study holds promise for other teachers in other fields of knowledge. Aspects of knowledge organization and presentation needed in text comprehension, analysis and evaluation/conclusion could require insights from studies such as the present one. Teachers are, therefore, equipped with the tools for helping their students in knowledge presentation and deep understand through the knowledge of different metacognitive and metarepresentational processing strategies of comprehension.

Students whose text comprehension capacity is low, average or high, are beneficial candidates from the present study. This is because diverse strategies of boosting their text comprehension abilities have already been explored metacognitively and metarepresentationally at the end of the study. Research findings, discussion and recommendations vital to text comprehenders are therefore advantageous to students of English language but of other fields as well, since they too, have to comprehend relevant text materials for successful scholarship.

Curriculum developers will find the present study relevant. It helps in making decisions relating to content selection, materials and areas for development, reading diagnosis and subsequent relevantly curriculum choices. Metacognitive and metarepresentational strategies application will be useful for reading comprehension curriculum choices.

In the area of assessment, examining bodies have a lot of benefit to draw from the present study. Examination norm is directed toward the most effective comprehension process construct (metacognitive or metarepresentation) that influences best comprehension results. In this way the disparity between test takers' interpretive norm and test makers' interpretive norm is bridged. Test is focused on demands that would extract students' real inner resources such as critical innovative thinking that they exploit in their real life situations, especially those that require problem solving capacities using appropriate strategies.

In the same manner, textbook writers going through the present research are helped to sharpen their focus on producing text materials that enhance real comprehension. Text materials that boost students' metacognitive and meterepresentational abilities and relate to learners' ethno-cultural, socio-political, experiences and thoughts are developed. Thus, the study has the potential to assist textbook writers in producing materials that are authentic and well contextualized.

1.7 Delimitations of the Study

The scope of this study covered three Government Secondary School, Aminu, Government Secondary Bomo and Government Secondary Kwangila, Zaria. The schools enroll students with different backgrounds. In this respect, the study is limited to finding out the comparative impact of metacognitive processing and metarepresentational processing strategies on students' text comprehension. Although many factors facilitate text comprehension, such as motivation and emotional stability, this study is delimited to comparative impact of metarepresentation and metacognition

on text comprehension because it is concerned with reading comprehension processing, which serves as the most vital element of linguistic communication.

The design of the study also necessitates the limited scope of the study. A quasi experiment requires a stable and in depth study over a considerable period of time. The employment of this design thus compels the delimitedness. The use of test as research instrument for the study, contributes to the limited scope too. The sampled subjects' scripts would undergo series of scoring and evaluation for indepth comparison. The study is also delimited to the use of t-test independent statistic, for effect, and Dunnett-test.

1.8 Basic Assumptions

In this study, the following basic assumptions were made:

- (a) Metacognitive processing strategies have no impact on text comprehension in senior secondary schools.
- (b) Metarepresentational processing strategies do not influence students' performance in text comprehension in remedial school.
- (c) Text comprehension performance is generally poor among secondary schools.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

In this section, cognitive linguistic and pragmatic theories are used to explore how processes involved in text comprehension could be accounted for. At the end of the review, the possibility of discovering a unifying framework is realized on the basis of which text comprehension material for research instrumentation would be considered in the present study.

2.1 Nature of Text Comprehension

Researches on text comprehension have now moved towards models in which memory-based and constructionist aspects of comprehension are integrated (Ludo and Charles, 2008). On the basis of this integrated model of text comprehension, important issues are raised regarding how online text processing can be modeled, the way it can actually take place and how learners learn to develop text comprehension skills. Therefore, comprehension processing is achieving currency in present day reading comprehension literature.

Comprehension is based on readers' construction of coherent mental picture of textual information. This is what is termed as constructionist model of comprehension in cognitive linguistics. By cognitive linguistics, we mean an area of study that focuses on mental processing of linguistic expression for both comprehension and production of linguistic meaning. (Minsky 1975; Goldman & Varnhagen, 1986; Gernsbacher, Zwaan & Singer, 2003). The model describes the process of constructing a coherent

representation, of meaning of a text. The reader must interpret the various pieces of information and identify meaningful connections to other elements in the text as well as semantic (background) knowledge. The resulting representation consists of idea point which captures the elements related to the text, and connections which capture the semantic relations. Working together, these nodes and connections form a network of concepts in the readers' mind. An illustration adapted from Van den Broek, Risdien, Fletcher, and Thurlow (1996) would explicate the claim. Thus, in reading a simple narrative about Lailah and Malik, and encountering the following in the text:

(1) Lailah dropped the banana peel.

Malik fell on his back.

the reader, when asked after reading the text, to indicate whether the text stated that Malik slipped on the banana peel, would respond that actually the text did not provide that information (even though it did). The reason, therefore, is that the reader figures a connection between the information in the two sentences. What this example illustrates is that the creation of coherence and meaningful connections between various pieces of information in the text is central to the comprehension of a text. In the example, therefore, it is the reader who activates critical background information (someone does not just fall without a cause, and *banana peel* is believed to be slippery) which allows the construction of coherence. However, construction of coherence cannot, in its own right, be achieved without the use of linguistic knowledge via the use of mental processing strategies and interpretive strategies as well. These strategies are what the present study would address in reading comprehension.

Olaofe and Massembe's (2006:26) clause relational approach further develops the constructivist model of reading comprehension. Consider the following example:

(2) The moon exerts gravitational pull on the earth.

Thereby it contributes to the development of life on earth.

Most readers would have little difficulty in identifying the referential relation between "it" in the second sentence and "the moon" in the first. They would experience much difficulty, however, in identifying the causal relation between the two sentences introduced by the use of "thereby". The present study is, therefore, interested in finding out such comprehension strategies involved.

Other cognitive linguistic theories explain processes of reading comprehension in different ways. Daneman & Carpenter, 1980; Just & Carpenter, 1992; Whitney, Ritchie & Clark, 1991, National Reading Panel 2000, theorized the relevance of allocating attention during reading comprehension. In that case, the reader can, at any one time, only attend to a particular sub-set of all the elements that could potentially be connected. Thus, the reader has to balance the need for coherence with the limited attentional capacity of the human cognitive system. This would, in turn, have important consequence for the reading process. On one hand, contents of the reader's attention absorber will have to constantly change while reading proceeds through the text. Activation (a state that renders thought and other inputs available for processing) of new elements will occur, while others become deactivated, and some increase or decrease in their level of activation. Thus, in the course of reading a particular text, fluctuation of elements in their activation will be regular. This process is what Van den

Broek, Risdien, Fletcher & Thurlow (1996) refer to as landscape view of reading and supported by Tzeng, Van den Broek, Kendeou & Lee, (2005); Swinney (1979); Graessar, Singer & Trabasso (1994). The present study is interested in the attention allocation process in reading comprehension processing because such activation processes may have to do with metacognitive and metarepresentational processing strategies in reading comprehension processing.

Associationism which means presenting knowledge as a network of ideas with interconnections, is another cognitive linguistic theory on reading comprehension (Kinstch, 1986). This theory was dismissed by Locke (1994) on the grounds that association is merely an element of randomness supplementing rational thought. Further, development of other frameworks in knowledge representation and use in text comprehension such as control structure is ensued. The control structure is a normal word associating network emphasizing word that has strongest association as the winner of the intended meaning in the expression. (Weinert, 1984; Taraban & Ryneanson, & Kerr 2000; Pintrich & Gacia, 1994; O'Brien, Rizzella, Albrecht, & Halleran 1998).

Ach (1910) and Lewin (1917) rejected control structure notion. The studies argued that it was not necessarily the strongest association that occurs, rather, it is only when a bit of information corresponds to the train of thought guided by the determination of the reader. The present study accepts the notion of association network since the reader's knowledge through its association with current information plays important role in text comprehension (Head, 1920; Minsky, 1975; Schank & Abelson, 1977; and Selz, 1972 Murdock 1983).

All the cognitive linguistic theories discussed above are concerned with explaining reading comprehension processes. The processes mostly seem biased towards inward processing of text material. These developments in comprehension processing were considered during subjects' treatment in the methodology chapter of the present study in the following way: how the inward process of reading comprehension tended to enhance students' text comprehension and the specific comprehension level the impact proves prominent.

From the reviewed cognitive linguistic literature on reading comprehension above, the present study agrees with associative nets. The theory seems stimulating because it comprehensively explains the abstractions such as mental activation and connection of ideas involved in processing reading materials (Newel, 1973; McClelland & Rumelhart, 1985; Waltz & Pollack, 1985; Kinstch, 1986).

Process of Text Comprehension

Text processing is looked at in this sub-section under two models. The models are cognitive linguistics and pragmatics. From the cognitive linguistic aspect, comprehension processing, Kinstch (1986) provides that text comprehension at the word level occurs when the word is related to the information contained in the phrase. This means that the reader reflects on the meaning of the word and enriches it with the idea of the phrase (Albrecht & Myers, 1995; Erickson & Matson, 1981; Paris 1990; Pilkington, 2000). However, if the assumed meaning of the word fails to relate to the phrasal idea, sentence comprehension is said to have failed. In this case, fresh processing of the word will start again. This mental activity of word and sentence idea relation processing is not acceptable in its entirety by the present study. This is because

where communication fails due to word meaning and sentence idea mismatch, pragmatic strategy will have to be used to figure out the intended meaning of the writer.

At sentence level, comprehension processing as described by Kinstech (1986) is supported by different studies and theories such as immediacy hypothesis which emphasizes word meaning and proposition relation (MacDonald, Perlmutter, & Seidenberg, 1992; Frazier & Clifton, 1996, Hagoort, Brown & Groothusen, 1993; Hargoot, 2005). The studies agree on the conclusion that word is immediately attached to a syntactic phrase to realize sentential proposition (Ludo & Perfetti, 2008, Plaut, McClelland, Seidenberg & Patterson, 1996; Schultz 1998; Van Orden & Goldinger, 1994; Stanovich 2000). However, the present study feels that word and sentence idea relation would deprive learners who focus on bottom level cues of the opportunity to use their pragmatic strategies.

Pragmatic theory of reading comprehension is elaborated by relevance theory of Sperber and Wilson (1986). By relevance theory we mean that a particular linguistic communication is relevant to the reader if it is worthwhile to the reader through shared assumption with the writer. Successful comprehension, therefore, depends on the potential context that is mutually shared by the reader and writer. This means that, it is only when the writer's intention and the reader's expectation meet, that communication could be successful. The present study is comfortable with this notion since the expectation of the writers and readers need to meet in communication for meaning to be realized.

From the discussion above, it is assumable that the relevance theory framework of comprehension is a shift away from the traditional descriptive-classificatory approach to an explanatory one. The present study, therefore, adopted its import in providing an explanation of comprehension as relevance oriented that is based on mutual context sharing between the writer and the reader. This could serve as natural basis for an empirical account of both evaluation of a reading comprehension process (seen as metaacognitive) and decision-making/ conclusion about a written material in a reading comprehension process (seen as metarepresentational).

This section has documented how complex processes take place during text comprehension and interpretation. It has been able to show that knowledge of the word is represented, recognized and used, using different cognitive linguistic and pragmatic theories and perspective. (Rieger 1975; Van Den Broek & Kintsch, 1983; Kintsch, 1986; Van Den Broek, 1997; Reichle, Pollatsek, Fisher &Rayner 1998; Mackoon & Gerigg, 1998). In the end, integrative cognitive model of comprehension exemplified by Kintsch's (1986) associative net presents a unifying model among the reviewed models of comprehension. In this regard, Sperber and Wilson's (1986) relevant theory provides a unifying pragmatic account of linguistic comprehension with which this study would operate.

2.2 The Nature of Metacognition

This section discusses issues regarding concepts related to metacognition and comprehension. A number of framework and theories were reviewed. This allows for a full account of metacognitive role in text comprehension would be presented.

Metacognition has been defined as “the abilities of individuals to adjust their mental activity in order to promote comprehension” (Gavelek and Raphael 1985:22 – 23). It is said to be the cognitive experiences that pertain to self-appraisal and self-management of mental process. These self-appraisals indicate personal reflections relating to individual’s knowledge states, abilities and learning characteristics. Self-management refers to mental processes that help enhance areas of problem solving. For example, making adjustment during a cognitive task (Winograd, 1990). Flavell (1979) referred to metacognition as knowledge that takes as its object to monitor or regulate aspect of any mental endeavour. In the same vein, Moore (1982) defines it as an individual’s knowledge about various aspects of thinking (Roth & Shoben 1983; Wood & Wood, 1966; Clay & Cazden, 1990, Hart, 1989; Pintrich & Schrauben 1992).

The concept of metacognition was gradually broadened to include anything psychological, rather than cognitive (Proust, 2007). For example, one’s knowledge of particular emotions or motive concerning a cognitive enterprise (example, awareness of anxiety when solving a problem in an examination) can be regarded as metacognitive because it involves mental state in comprehension processing. Recent literatures extended the term by adding to its cognitive domain, the emotional one, referring to emotions directly following the mental process and the subject’s ability to monitor them (Flavell,2000).

Issues regarding whether “metacognitive” should be used to desirable thoughts that were once considered metacognitive but became non-conscious and automatic still remain debatable. Researchers (Davidson (1968); Ratcliff 1978; Paris & Winograd, 1990;Pintrich,Wolters & Baxter 2000), defend the term “metacognitive” as conscious

and deliberate thoughts that seek to control and adjust current thinking process. This is done by regulating and monitoring one's learning disposition.

However, Koriat (2000) relativizes metacognition on the basis of being integral part of consciousness, between two levels of experiences. The higher level, which involves an explicit mode of operation and characterized by high degrees of consciousness and control, and the lower level which involves an implicit mode of operation, characterized by low degrees of consciousness and automatic inferences. Further distinction between knowledge and skills, as parts of the boundaries of metacognition, has been extended by Schoenfeld (1987). "Knowing that" indicates knowledge, while "knowing how" relates to skills. This could be relevant to the present study in as much as one may "know that" distinguishing main idea from the supporting ideas is critical to text comprehension. Another person could have the ability to do this in practice which represents the skills. Further, the person may know that different strategies can be applied in different text comprehension enterprise, while another person has the ability to select the suitable strategy needed to comprehend the text appropriately (Sperber, 2000; Has-Spohn, 1994; Kripke, 1972; Bian & Cao, 2003; Tzeng, Van den Broek, Kendeou & Lee 2005).

Flavell's (1981) earlier distinction between metacognitive experiences and metacognitive knowledge elaborated in detail on the boundaries of metacognition. Metacognitive experiences appear to be the conscious feelings during some mental activity relating to process. For example, this process occurs during a text reading comprehension task, feeling difficulty in understanding, perceiving, comprehending, or remembering a word or sentence. The part of the reader's accumulated world

knowledge which has to do with people, ideas, goals, are metacognitive knowledge. It indicates what the reader is able to describe, explain or differentiate uncertainties and feelings.

Central to Flavell's (1979) "classical model" of metacognition is the idea that monitoring of a vast range of mental endeavors occurs through the actions and functions among four categories phenomena:

- (a) metacognitive knowledge,
- (b) metacognitive experiences,
- (c) goals (or tasks) and
- (d) actions (or strategies).

By metacognitive knowledge, Flavell (1979) refers to the segment of acquired world knowledge or beliefs accumulated through experiences and stored in the long-term memory that concern the human mind and its preoccupations. Part of the stored knowledge is declarative knowledge indicating "knowing that" and procedural knowledge concerning "knowing how". Knowing how and when to supplement poor memory by the use of a shopping list or list of points for delivering a lecture, is an example of a declarative knowledge (Stich 1978; Stevens, Robert, Slavin, & Ann 1991; Swanson 1992; Sugrue, Corrado & Newsome 2005; Reder & Schunn, 1996). Knowing to write the shopping list on appropriate occasions is a display of procedural knowledge. The category of task variable concerns what the individual learns and how the nature of information he encounters affects the way he deals with it. For example, the knowledge that it is easier to learn the substance or gist of a story than it is to learn it verbatim (Davidson 1968; Weinert 1984; Broek & Trabasso; Church 1989 & Veenman 1993). The

action relates to the strategies that are likely to be more relevant in achieving the goals in the metacognitive endeavor. For example, a struggling reader may believe that a better way of learning to retain information is to pay attention to the main points.

The second major conceptual unit that Flavell's (1979) classical mode taxonomized is the metacognitive experiences. What characterize these types of experiences and of course differentiate them from another kind is that they are cognitive endeavour most frequently recurrent in nature. An example is provided using a context in which one suddenly has the anxious feeling that one does not understand a particular thing, a concept or idea and that understanding such a phenomenon is imperative (Bassnet& Lefevre, 2001; Larson, 1984; Wilson, 1994; Samuels 1994;Zhou, 2004). That feeling is a metacognitive experience whenever something is hard to perceive, comprehend, remember or solve. Metacognitive experience is said to have occurred. The present study is interested in metacognitive experience and metacognitive knowledge as they may seem to affect text comprehension process.

Metacognitive skill is a concept added to metacognition by Efklides (2002). It basically serves as the control of cognition. The reason for the addition of metacognitive skills is, due to the fact that other metacognitive components only serve as monitoring rather than control of cognition (Brown 1989; Plaut, McClelland, Seidenberg & Patterson, 1996 and Van Orden & Goldinger, 1994). These types of skills therefore refer to the conscious control process such as planning, monitoring of progress of processing, effort allocation, strategy use and regulation of cognition. Although no illustration of how, when and effects of metacognitive skills was forwarded by Efklides

(2000), the cognitive control function would be observed in the present study by observing how students process text strategical during treatment.

An alternative model of metacognition was suggested by Nelson and Narens (1992). The model revealed two basic features of metacognition. The first feature is the splitting of cognitive processes into two interrelated levels. The two levels are called the “meta level” and the object level. The second feature of the metacognitive system is a kind of dominance relation which Nelson and Narens (1992) say are determined by the direction of the information flow. The flow of information provides the possibility of a distinction between what the study call “control” verses “monitoring”. The present study is interested in the control versus monitoring. Hence, students’ responses were observed their processing control and monitoring of information in a text material by the use of strategies.

Pragmatic Theory and Metacognitive Text Comprehension

Relevance theory is the pragmatic theory that explains mental process of constructing meaning. It points out that a written expression is consistent with the principle of relevance if and only if the writer might rationally have expected it to be optimally relevant to the reader. In this case, the reader is allowed to assume that the interpretation conveyed by the writer is the first interpretation that a rational writer might have expected to bring the reader adequate contextual effects. Equally, the text should not cost the reader unjustifiable effort in achieving those effects. Such an interpretation, according to Sperber and Wilson (1986), is consistent with the principle of relevance (Perner, 1991; Gibbs, 1987; Sperber and Wilson, 1986, 1987, 1990a; Smith, 2004).

The theory is pertinent to any study of metacognition in the area of comprehension. At the cognitive level, the relevance theoretic perspective of comprehension does not start from the aspects of word arrangement in comprehension. Rather, it focuses on the writer's ability to pass information. This creates a gap between the writer and the reader in text comprehension processing.

The present study, therefore, attempted to fill the gap of non-explanatory aspect of the reviewed models of descriptive metacognitive comprehension strategies with an explanatory – based approach using relevance theory. Thus, the study considered that metacognitive comprehension of text tends to describe the aspects of text comprehension processes by grouping them into categories instead of explanatory perspective. This could provide a natural basis for an empirical account of the predictive and evaluative functions of metacognition already reviewed in this study. The process could have a direct bearing on the comprehenders decision-making in processing a text material for the realization of relevance or otherwise.

2.3 Text Comprehension and Metacognitive Ability

A number of studies demonstrates that successful comprehension does not necessarily occur automatically. Instead, it depends on the metacognitive processing which is purely a cognitive affair. This consists of knowledge about and regulatory efforts of mental processing (Bazerman, 1985; Pressley & Afflerbach, 1995; Stich, 1978). Different strategies are employed, during text comprehension, by the reader which may be effortful and procedural, (Alexander & Jetton, 2000; Pressley, Brown, El-Dinary & Afflerbach, 1995).

Prior researches (Wade, Trathen & Schraw, 1990; Taraban, Kerr & Ryneerson, 2004) are in agreement with the view that college students select and use different strategies that are directed toward text comprehension in reading tasks. O'Malley and Chamot (1990) identified several metacognitive strategies such as evaluation and predicting later topic. These include planning the type of strategy to be used, monitoring and assessing their effectiveness and selecting a contingency strategy in case of failure to comprehend a portion of a text (Maria, 2008). Advance organization which involves previewing the main ideas or concepts of the text usually through skimming, to relate the previous knowledge to the new topic is one metacognitive strategy proposed by Chamot and O'Malley (1994). Organization planning is another strategy which refers to planning the comprehension task, for example, identifying the segments, sequence of main ideas that could help in understanding the text. One other proposed strategy is selective attention employed when deciding in advance to examine specific aspects of information mostly by skimming for key words, concepts and linguistic markers. The study (O'Malley & Chamot, 1994) proposed an approach to teaching and learning of language called Cognitive Academic Language Learning Approach (CALLA). It suggested that there should be preparation stage followed by presentation, practice, evaluation and then extension of item to be taught and learnt. The present study used this approach to treat subjects of the two categories-metacognitive and metarepresentational. A self-monitoring strategy relates to checking one's comprehension especially by the use of inter-textual relationship of ideas and concepts (Olaofe & Masembe's, 2006; and Mann & Thompson's, 1987). Finally, self-evaluation

pertains to how well an individual has accomplished a text comprehension task after completion of the task.

Metacognition comprises two basic components: the knowledge and the regulatory components, (the former being made up of people's knowledge, task knowledge and strategy knowledge, and the latter, of planning, monitoring and evaluating activities). These components consist of a variety of metacognitive processes relating to identifying important ideas in a text comprehension instruction (Ho, 2009). Ho (2009) further identified three kinds of strategies that helped readers remember key points in a text. "Rehearsal" strategies, like repeating, reciting, practicing, copying and underlining helped in processing information to short-term memory. Extension strategies such as paraphrasing, summarizing, reviewing, comparing/contrasting, testing, making predictions and inferences are means of processing information to long-term memory. Finally, Ho (2009) explains that "organizing strategies" like grouping, ordering, listing, outlining, diagramming and tabularizing fall in between the former two strategies. This last strategy proposed by Ho (2009) contradicts Nelson and Narens (1992) analysis of "observation level in which Ho's strategy deviates from mind-to-world projection (outlining, listing, grouping etc).

At the final analysis, Ho (2008) recommends two learning techniques that strengthen comprehension and comprehension monitoring as part of metacognition. These are: self-directed questioning and self-directed summarization. By self-directed questioning, comprehenders themselves devise questions and answer them while going through different parts of the text. Self-directed summarization refers to the periodical stopping by the readers to summarize in their own words what they have acquired from

the preceding parts of the text. Other studies such as those of Palinscar 1985; Cohen, Olshtain, 1986; Al Melhi, 2000; Winne, 2008; Bartlett, 1932 suggest that a lot of metacognitive efforts and strategies come to play for an effective text comprehension to be achieved

Feryal (2008) categorizes metacognitive strategy training models into two. The bottom -up self-regulation and top-down self regulation.

“Bottom-up Self Regulation: When self-regulation is triggered by cues from environment it is bottom-up. Instead of beginning work with goals that are firmly established, it is feedback from the task and classroom reward structures that help to establish work orientations and generate changes in work styles...

Top-down Self Regulation: The mastery/growth process explains the pursuit of self-chosen learning goals as goals that increase academic resources. Mastery strivings are organized from top down by motivation such as personal interest, values, expected satisfaction, and rewards. The self-regulation is top down also because students adopted learning goals steer the process (Feryal, 2008:5).

In this regard, therefore, all the metacognitive strategy training methods reviewed so far (Wade, Trathen & Schraw, 1990; Taraban, Kerr & Rynearson, 2004; O’Malley & Chamot, 1990; Maria, 2008) are said to have fallen, either under bottom-up or top-down metacognitive self regulation (depending on the characteristics). That is to say, the strategies are either mind-to-world of the reader or world to mind as Nelson and Marens (1990) have indicated.

The present study observes that all the metacognitive views of comprehension seem classificatory in nature. No explanatory account of metacognitive strategies in text

comprehension that involves both literary and non literary texts was presented. The same is the case with one language and across language boundaries. The attempt looks forward to identifying explanatory alternatives to this incompleteness. It also includes in the metacognitive strategies training of subjects using Frayal's (2008) idea of metacognitive techniques in the data collection procedure (Chapter 3). These include self-directed questioning in which readers devise questions and answer them while going through different parts of the text. The other is self-directed summarization in which a reader stops at particular points so as to summarize in their own words what they acquire from the preceding part of the text.

From the metacognitive aspect of comprehension literature reviewed above, the present study used Feryal's (2008) metacognitive strategies in treatment of metacognitive reading comprehension subjects in the methodology chapter for twelve (12) weeks. The strategies borrowed from the studies review so far for the present study are:

- (i) **Use of Strengths:** while reading, the student exploits personal strengths such as trying to find out the purpose of the reading in order to better understand the text, (Frayal, 2008).
- (ii) **Using Background information:** while students are reading, they consider and revise their background knowledge about the topic; based on the text's content, (O'Malley and Chamot, 1990),
- (iii) **Evaluating:** readers evaluate texts to determine whether they contribute to their knowledge of the subject or not (Ho, 2008).

- (iv) **Underlining:** while reading, students underlined main ideas, (Frayal, 2008) in order to understand the basic idea of the text.
- (v) **Reading Goals:** students evaluate whether what they read is relevant to their reading goals or not (Frayal, 2008).
- (vi) **Distinguishing:** As students read, they distinguish between information that they already know and new information (Frayal, 2008) and
- (vii) **Guessing the later topic:** students anticipate information that will be presented later in the text (Frayal, 2008).

Metacognition has been presented as having different models: Flavell's (1979) classical model, Nelson and Naren's (1990) alternative model, Efklides (2002). Proust (2007) describes metacognition, its properties, effect and functions. This section indicates how complex human metacognition and its study is. This makes it worthwhile object of linguistic text comprehension investigation. This is done by analyzing metacognitive strategies in text comprehension. Relevance theory of Sperber and Wilson (1986) was used and further adapted as both unifying and guiding theory in finding the effects of metacognitive ability on text comprehension in the present study. Finally, Fryal's (2008) metacognitive strategies were adopted for use in treating the study's subjects in the methodology chapter.

Table 2.1 highlights the summary of metcognition in text comprehension and processing.

Table 2.1: A Summary of Metcognition in Text Comprehension

Metacognition in Comprehension	Relevance to the Study
* Metacognition being the capacity to adjust cognitive activity by the reader such as organizing, listing and tabulating e.t.c for promoting comprehension (Fravell, 1979).	The extent of this capacity and its effect would have direct bearing on the present study's results.
* Declarative knowledge (knowing that) related listening and organizing procedural knowledge (knowing how) involving asking self-directed question are involved in comprehending a text metacognitively (Ho, 2008).	The present study would use research instrument for data collection that would extract these knowledge types.
* Metacognitive strategies are involved and directed toward text comprehension. These include: planning the type of strategy to use by selecting appropriate strategies at a time through the use of background knowledge and assessing it, organizing or previewing the main ideas of the text and aligning the idea to preview knowledge (Ho, 2008).	In treating the subject, the present study would expose the subject to metacognitive strategies such as predicting next idea, self-evaluating a reading progress and using background knowledge to confirm an idea in the text.
* Metacognitive experiences are feelings of failure, success or difficulty in achieving a particular goal e.g. comprehending an idea or concept in text comprehension (Fravell, 1979).	This is particularly important to the present study as metacognitive experiences, being to some extent affective, affect text comprehension.
* Metacognition does not involve mental conceptualization of thought. It involves mental perception of thought (Proust, 2007).	The idea of perceptual as against conceptual nature of metacognitive capacity of thought would affect comprehension capacity and therefore be observed by the present study.
* Relevance theory explains metacognitive engagement in comprehension through inferential and contextual phenomena. Thus, comprehension takes place as the inferences involved metacognitive processing strategies. These include: using background knowledge, personal strength, evaluation, reading goal, distinguishing and guessing letter topic. This gear toward search for relevance by the reader (Sperber and Wilson, 1986).	Processing efforts and cognitive effects beign central to relevance theory in comprehension is very relevant to the present study.

Figure 2.1 presents an illustration of metacognitive reading comprehension process.

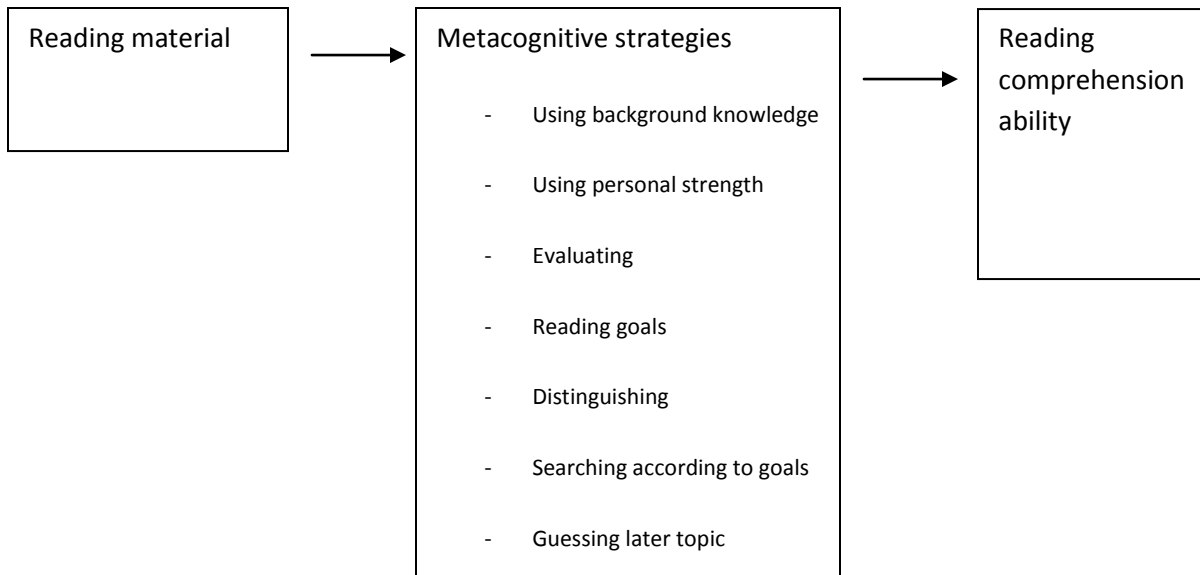


Fig 2.1: Metacognitive Reading Comprehension Process

This process, according to Fig. 2.1, involves an interaction between reading material learner's use of metacognitive strategies and reading comprehension performance.

2.4 Nature of Metarepresentation

Discussion under this section relates to how metarepresentation performs particular functions in text comprehension. Discussion also focuses on the way metarepresentation separates itself from other cognitive pragmatic constructs such as metacognition and mind reading. This is done with the use of various theories and frameworks so that at the end, the possibility of discovering a unifying theory to be adapted for the study's operation is realized.

Human beings are uniquely endowed with metarepresentational abilities. This is, on the foremost ground, a capacity to attribute the content of meaning. Sperber (2000:1) defines the concept of metarepresentations as “representations of representation” figuring out and attributing meaning to writer’s text or presentation. In a more strict sense, not all picturing of meaning are metarepresentations. Sperber (2000) illustrates this distinction with a peculiar example adapted by the present study.

- (1) (a) Lailah had a thought.
- (b) This claim is often repeated.

The statements (1a and b), according to the present study, are about representations which do not necessarily figure out their contents. In that case, the statements are not said to be metarepresentational in a useful sense. Though the statements do state or imply something about the content of some representation, they do not articulate the contents of these meanings. That is, there is the lack of representational duplication. Therefore, the statements are metarepresentational only in a rudimentary way.

A full fledged metarepresentational capability, as Sperber (2000) indicates, is that found in human languages and in human thinking based on the possibility of interpreting any expression type as representing another type of the same expression. For example:

- (2) (a) Lailah thought that the book was mutilated.
- (b) Sabri believes that he is quite healthy.
- (c) Malik believes that God created everything.

are linguistic types which indicate the human capability of expressing their mental equivalent. The expressions in the internal system of conceptual representations serve to represent expression types which resemble in relevant aspect (Sperber & Wilson, 1986/1995).

Wilson (2000) agrees and further explains the concept of metarepresentation as a picturing of representation which is a higher order reflection with lower- order meaning construction embedded within it. Carruthers & Smith (1996); differ from Whiten (1991); Wilson (2000) and further explore how people differ in their ability to attribute to others beliefs incompatible with their own. Consider the following examples adapted from Wilson (2000):

- (3) The book is in the bag.
- (4) (a) Malik thinks the book is in the bag.
(b) Malik thinks the book is not in the bag.
(c) Malik thinks Lailah thinks the book is in the bag.
(d) Malik thinks Lailah thinks the book is not in the bag.

A person who believes (3) and lacks the ability to attribute to other's beliefs incompatible with his own, would be limited to metarepresentations in (4a) and (4c). But a person who has a first order theory of mind could attribute meaningfully to others beliefs that differ from his own (as in 4b); while someone with second order theory of mind would attribute to others beliefs about the beliefs of others that differ from his own (as in 4d) Second order metapsychological abilities of the type cited above are said to be stable in normal people (Baro & Cohen, 1995; Baron, Cohen, Leslie & Frith, 1985; Baron & Cohen, 1993; Happe, 1993; Leslie, 1991). The present study would find

out the relationship between the first and second order theory of mind and text comprehension. This is because the theory does not clearly indicate where comprehension starts and ends based on the first and second order of theory of mind.

From the Gricean pragmatic literature on the attribution of speaker/writer meaning there is an indication of a total shift away from a coded model of communication to inferential account where construction and recognition of communicator's intentions became central. Therefore, the notion that comprehension relates to a kind of mind reading theory has remained dominant in pragmatics which clearly indicates Grice's work's being prevalent for several decades (Blakemore, 2000; Gordon, 1995; Carey & Xu 2001).

Basic to Grice's (1975) treatment of metarepresentation is the idea that both communicator (writer) and the (reader) are deeply engaged in metarepresentation: the communicator metarepresenting the thought she wants to convey, and the audience in interpreting the communicator's intentions (Sperber, 1996; Origgi & Sperber, 2000). In essence, Grice (1975) treats comprehension process as starting from a metarepresentation of an attributed expression and ending with a metarepresentation of an attributed expression (Premack 1988; Gibbs 1994; Chomsky 1975; Leslie 1987).

When Malik says (5) to Lailah:

- (5) You are playing with your studies.

Lailah, in comprehending the utterance, might develop different metarepresentations such as in (6):

- (6) (a) Malik said, "you are playing with your studies".
(b) Malik said that I am playing with my studies.

- (c) Malik believes that I am playing with my studies.
- (d) Malik intends me to believe that I am playing with my studies.
- (e) Malik intends me to believe that he intends me to believe that I am playing with my studies.

From 6a – e, it is clear that Gricean pragmatics particularly deals with specific metarepresentational abilities in identifying writer meaning. The framework does not provide a model that explains how metarepresentations are used as writer meaning. The present study further add that:

- (7) (a) Malik accused me. I'm playing with my studies.
- (b) Malik told me I am playing with my studies.

are both part of the writer's meanings: what Malik intends to communicate. This is being frowned at by many works (see Rost, 2002; Shohamy & Ibar, 1991; Lynch, 1998; Kasper & Rose, 1999; Niki & Tajika, 1994).

Gricean conception of comprehension involves not too little metarepresentation but too much of it. In this regard, a Gricean writer's meaning can be conveyed when the intention of the writer's is not only merely recognized but also transparent in the sense that seems to be definable only in terms of an infinite metarepresentations. First, the writer must intend to inform the reader of something; or intend the reader to recognize this informative intention, intend the reader to recognize the high-order intention (Racanati, 1986; Schiffer, 1972; Searle, 1969; Smith, 1982; Wilson, 1986/1995). For example Malik is warning me that am playing with my studies. It means that, for a writers meaning to be conveyed, the writer's informative intention and of course every other contextual assumption required to identify it, must become mutually known.

Grice's (1975) comprehension emphasis that the decoding of the linguistic signal provides a default assumption regarding the writer's meaning. By default, the writer is assumed to mean what the written sentence means. The default assumption can therefore be inferentially supplemented/complemented or possibly corrected when there is a mismatch between it and general assumption about the goals the writer is presumed to aim at in her linguistic behavior. The possible inferential correction involves a sort of metarepresentational reasoning about the writers' intentions where not only the conclusion is metarepresentational but where some of the premises are. For example, in a metaphor of the type in (8), the writer is expected to reason as in (9).

(8) Malik is a lion.

(9) (a) The writer seems to have said that Malik is a lion.

(b) The writer does not believe and I know he does not believe that Malik is a lion.

(c) The writer is expecting the cooperative principle, specifically, trying to be truthful.

(d) Therefore, the writer could not mean that Malik is a lion.

(e) The writer is definitely intending to convey a closely related meaning within the limits of cooperative principle.

(f) By inference to the encoded message, the writer means that Malik is like a lion: he is brave, ducal, he is revered and so on.

With the above illustration, it is clearly shown how cumbersome the character of the inference of Gricean comprehension pragmatics is. It makes it necessary that every time the writer's meaning diverges from sentence meaning, use of complex mental

devices ensues. This is due to Grice's (1975) thought of meaning attribution as involving conscious and discursive reasoning very much unlike spontaneous inference deployed in mind reading activity. Following is Grice's (1975:50) "working schema" for identification of implications:

- (a) He has said that P.
- (b) There is no reason to suppose that he is not observing the maxim, or at least – cp (= co-operative principle).
- (c) He could not be doing this unless he thought that q.
- (d) He knows (and knows that I know that he knows) that I can see that the supposition that he thinks that q is required.
- (e) He has done nothing to stop me thinking that q.
- (f) He intends me to think, or is at least willing to allow me think, that q.
- (g) And so he has implicated that q.

It is implausible to imagine even adults going through this sort of lengthy process of inference in attributing writer's meanings. Yet even preverbal infants do remarkably engage in inferential communication as in the following (from a 12 – month – old infant) shows:

Malik, crawling toward a table, was taken away by mother. Malik began to cry pointing at the table he intended to reach (on which there was a cup). Mother put him down and Malik continued to point at the table on which there was a cup, smacking his mouth concurrently. This is Malik's way of asking for water.

The illustration above shows that preverbal infants are capable of understanding that one mind can be interfaced with another through mutually comprehensible signals.

It is easy then, to accept that preverbal infants engage in inferential communication without necessarily going through the sort of conscious, discursive reasoning illustrated in Grice's (1975) "working schema" (Smith, Shields & Washburn, 2003; Smith, Shields, Schull & Washburn, 1997; Goldman, 1992; Peacock, 1998; Peacock, 1999; Gordon, 1993).

The basic problem with Gricean comprehension pragmatics, then, is the substantial underestimation of the amount of inference involved in linguistic comprehension. As indicated by the "working schema" Grice (1979) sees the recovery of literal meaning as the starting point of comprehension (meaning of the sentence), which is determined independently of writer's intentions. The present study sees a good evidence that writer intention helps in determining not only what is implicated in the sentence but what the sentence says (Carston, 1988, 1998; Racanti, 1989, 1999; Sperber & Wilson, 1986/1995, 1998b).

It becomes clear from Grice's (1975) "working schema" that guides comprehension of implicature, that the content of the implicated meaning is only found in stage (c) of the "schema". No explanation of how the meaning recovered was given. "Working schema" therefore, so far as this study observes, is not functionally made to help the reader construct suppositions about the content of the implicated meaning, but only to show that, once constructed, it might be confirmed to be part of writer meanings, as also shown in Olaofe and Masembe's (2006) Clause Relational Approach, Whiten & Richard (1997); and Grice (1989). Until some idea of how hypotheses about the writer's meaning are constructed become clear, seeing how the tension between metacommunicative and metapsychological abilities would be suppressed will not be

tenable (Dennett 1991; Chomsky 1980; Byrne & Andrew 1988; Gutt 1991; Baron-Cohen 1995).

From the cognitive linguistic account of metarepresentation, Proust (2007) views metarepresentation as “ a representation whose content includes: (1) a first order representation, such as “it is raining” to represent an idea and (2) the representation of attitude directed at that content, such as “I believe (I perceive, I regret) that it is raining” to suggest attitudinal information (P;3)”. Proust’s (2007) framework seeks to explain how an expression (written) or utterance constructed as metarepresentation can admit various cognitive interpretations.

The framework explicates that since metacognition has to do with thinking about thinking, then it is necessary that it requires representing both “thought content (TC) and propositional attitude P_1 (the believe or desire) that are attached to it. It also includes the representation of oneself as having an attitude. It also requires a second – order propositional attitude P_{A2} that bears on the P_{A1} ” (P.3). Proust (2007) explains that in evaluating one’s current belief state or learning state, or predicting possibility of remembering a name, one “must” represent oneself as believing that one is remembering something, such as a name of so so; and one is learning so soP or as learning material M. Thus: (11) $P_{A2} P_{A1}$ (self) {TC} – This was further supported by Shallice (2006); Schnotz (2005); Recanati (1993); Recanati (2000a); Recanati (2000b); Stalnaker (1987).

The present study is not comfortable with Proust’s (2007) framework because it cannot explain how a child or even adult can comprehend say, metaphor using this kind of on-line metarepresentation.

In similar cognitive linguistic view, Goffman's (1974) theory of frame analysis posits that social and natural situations can be interpreted on various levels. For example, a narrative text can be interpreted differently depending on whether it is recognized as an account of real-life events, as joking or as a multi-layered structure with respect to framing process, as in Shakespeare's use of play within a play in *Hamlet*. First, there is the story of Gonzago's murder framed in a theatrical production. To the audience on stage this should not appear as anything else but a play. But Hamlet's manipulative choice of the text for the play turns it into a fabrication to attack the king. All this is happening as part of the play written by Shakespeare, in which the staged audience are really actors before real audience.

The appropriateness of using frame analysis for uncovering and discussing different layers of meaning in a text follows from the origin of the concept. Tannen (1979) informs that the term frame was used originally by Bateson (1955) "to explain how individuals exchange signals that allow them to agree upon the level of abstraction at which any message is intended" (Tannen, 1979:141). And of course the explicated or implicated meaning in a text intended by writer as interpreted by the reader is adaptable from Bateson's (1972:186) account of picture frame, for textual frame analysis in this study. The reason is that framing can turn out to be a powerful mechanism for identifying and analysis of different layers of textual meaning and comprehension.

Frame analysis, is therefore, adaptable for the study of metarepresentation as it relates to text comprehension among students. In this case, the meaningfulness of a text would depend foremost on finding appropriate contrast to what appears on the textual form for the negotiation of writers and readers' expectation. The outcome of

comprehension will depend on the framing process that applied – of what the reader will expect to understand from the given text.

Structures of expectation make interpretation possible, but in the process they also reflect back on perception of the world to justify that interpretation. (Tannen, 1979:144).

Discussion of metapresentation in relation to comprehension has been based on Gricean (1975), Proust (1988), Tannen's (1975), Fukushima 1991; Fraizer & Clifton (1996). The presents study faulted Grice's "working schema", Proust's model, and accepted with modification Tannen's (1975) frame analysis in reading comprehension. Grice's (1975) "working schema" and Proust (2007) were not accepted in the presented study. Tannen's (1975) frame analysis, Fukushim, Frazer and Cliftons (2000).

2.4.1 Types and Premises of Metarepresentation

Sperber (2000) indicates that metarepresentation is of three types: mental, public and abstract. A mental representation occurs in an individual and is causally linked to other mental and non-mental states. For example, in

(10) Malik thinks Lailah said that it is implausible that men gossip.

- (a) Malik thinks that Lailah said that it is implausible that men gossip.
- (b) Lailah said that it is implausible that men gossip.
- (c) It is implausible that men gossip.

In 10 (a), the underlined phrase metarepresents a mental representation of Malik's. In this case, its processing is wholly or partially the individual's locus which may be sad or happy, disturbing or helpful. Mental states can be normatively evaluated

in psychological terms as poorly or well reasoned, as imaginative, as delusional and so on.

In 10 (b), the underlined metarepresents an expression/utterance, which is a public representation of Lailah's. A public representation is said to typically occur in the common environment of two or more people; it is aimed at communication between the writer and the reader. It has particular linguistic form and is being used to convey a certain content in a given context for attention grabbing comprehensible by the reader or audience. It is normatively evaluated from communicative perspective as sincere or sincere, intelligible or unintelligible, relevant or irrelevant.

Finally, 10 (c) metarepresents a meaning regarded in the abstract (as hypothetical), independently, in this case, of whoever might have expressed it. This type of metarepresentation is reduced to its logical, semantic and epistemic properties. It may be true or false, plausible or implausible.

Metarepresentation draws inferences from situation and behavior to mental state as in (11a-c), from mental state to other mental state as in (11a-b), and from mental state to behavior as in (11a-b):

Situation and Behavior to Mental State

- (11) (a) There is a snake in front of Malik.
Therefore, Malik knows that there is a snake in front of him.
- (b) Malik is panting.
Therefore, Malik wants to drink.
- (c) Occasionally looking behind his back.
Therefore, is trying to escape.

Mental state to other Mental State

- (12) (a) Malik knows that there is a snake in front of him.
Therefore, Malik is afraid of the snake.
- (b) Malik wants drink.
Therefore, Malik wants to find some water.

Mental State to Behavior

- (13) (a) Malik is afraid of the snake.
Therefore, Malik will try to escape.
- (b) Malik wants to find some water.
Therefore, Malik will go to the river.

Part of the function of metarepresentation in text comprehension is interpretive reanalysis a text comprehender engages in. Carston's (1994, 1998a) and Robert's (1993/7) account of text comprehender's reanalyzing process is remarkably similar. Both indicate that a text reader uses metarepresentational strategies such as deep meaning and complex understanding a result of the derivation of a contradiction which then causes the process of reinterpretation. A particular tension is found by this study with respect to the answer to questions such as what may cause and motivate reanalysis by the text comprehender during text comprehension? What mental or pragmatic criteria does the reader employ in this interpretive reanalysis? This will be find out at the end of the study.

This study, therefore, suggests that reanalysis is the direct result of interpretive dead-lock between the text reader and material read. A particular interpretation is ignored and a reanalysis is necessitated since the first interpretation fails to satisfy the writer's intended interpretive criterion: such as that of relevance, coherence,

informativeness. Consider: (14) For a cause and motivation of reanalysis by a text comprehender:

(14) (a) The intelligent man is not intelligent.

(b) The intelligent man is intelligent.

From first interpretation, it appears that neither satisfies the criteria of informativeness or relevance. This leads to a reanalysis by the reader in which case the occurrence of the first “intelligent” is clearly echoic use to represent some other representation (written) attributed to somebody (the man) as being intelligent. The reanalysis now satisfies the reader’s expectation of contextual relevance and thereby achieves (negative) effects concerning the writer’s disagreement (in 14a) and positive effects (in 14b). The present study accepts, with modification, Carston’s (1994) comprehender’s interpretive reanalysis as possible way of a readers reprocessing information.

From the reviewed literature on the premises of metarepresentation, the three (3) types of metarepresentation (mental, public and abstract) would be used as the basis of treating subjects in chapter four. For example, presenting subject with complex meaning realization can be based on public representation, thus:

(15) The man kicked the bucket.

The expression above requires complex metarepresentational strategy which is public because it involves communicating meaning between the writer and the reader.

2.4.2 Pragmatic Theory and Metarepresentation

The metarepresentational account of text comprehension in pragmatics is by this study, more stimulating in relevance theory. Relevance theory draws a distinction between two types of cognitive processes employed in understanding a given text: decoding and inference (Carston, 1998c). In a response to Burton - Roberts (1989a), Carston (1998a) insists that on the relevance conception, pragmatic inferential activity is a response of receivers of written stimuli which carry the presumption of optimal relevance. This was supported by Nida, 2001; Meyer, 1997 and Lubberda, 1998. In text comprehension, Carston (1998a) indicates that it is a human tendency for a text reader to interpret, in terms of mental states such as beliefs, intentions, desires, and so on. This interpretation process is located within a bigger picture of general relevance-seeking information processing. According to this view, pragmatic metarepresentation (inference) is fundamental and the employment of a code (written linguistic system) as communicative stimulus is only a helpful addition. This is advanced by Sperber and Wilson (1986/95), Sperber (1994) and Carston (1998b) and further expounded by an evolutionary consideration in Sperber (1990).

In relevance theory, text comprehension, involving inferential communication, is metarepresentationally analyzed in terms of two layers of intentions; first is the informative intention: to make particular set of assumptions clear or more clear to the reader/audience. The second is the communicative intention which refers to making the informative intention mutually manifest in both reader and writer (Sperber & Wilson, 1986/950; Proust, 2001; Nunberg, 1993). Thus, the theory, pragmatically considers text comprehension an ostensive – inferential communication. By ostensive-inferential

communication, the communicator (writer) produces stimulus (written text) which is made mutually manifest to both the writer (the communicator) and the reader what the writer intends by this stimulus, to make manifest or more manifest to the reader a set of assumptions. It follows that in the stimulus (the stretch of a text) the content of the writer's meaning is a set of assumptions embedded under the informative intention (Muskens, 1991; McGinn, 1982; Lewis, 1970). Once the informative intention is made mutually manifest in both reader and writer, transparency is said to have been achieved. Then, a series of metarepresentations would occur in principle. This means that each assumption in the series does not necessarily have to be mentally represented. In this case a full-fledged writer's meaning would involve a fourth-order metarepresentation like the one in (6e) above: he intends me to believe that I am playing with my studies.

The relevance theoretic idea about metarepresentation lies on the conception that written text comprehension depends on forming a metarepresentation of a representation of the writer. It highlights that the writer's meaning is a mental representation expressed by the writer (in writing) which she intends the reader to recognize and develop some particular attitude (e.g. accept as true) (Waltz 1985; Snell-Hornby, 1988 and Thackeray, 2000). The process of picturing the writer meaning involves strategies guiding the reader to realize by the writer.

What is deducible from relevance theoretic approach to metarepresentation in text comprehension is the fact that it removes the Gricean's notion of mutual knowledge and replaces it with mutual understanding of assumption. Wilson (2000) defines manifestness as "assumption is manifest to an individual at a given time if he is capable at that time of mentally representing it and accepting its representation as true or

probably true” (P.9). This is further clarified with the idea that an assumption cannot be known or believed as claimed by Grice (1979) without being explicitly represented; and it can be manifest to an individual if it is merely capable of being naturally inferred (Leslie, 1987; Lewis & Mitchell, 1994; Scholl & Leslie, 1999; Smith & Tsimpli, 1995).

With this development, relevance theoretic definition of text comprehension in terms of the notion of mutual manifestation reconciles and satisfies the theoretical requirement of clarity and of psychological acceptability shared by both the writer and the reader. This is missing in Grice’s (1979) procedure. The present study would lean on metarepresentational ability of picturing the writer’s metarepresentational (high-order) intentions in text comprehension to find its impact. This is based on relevance theoretic principle of informative and communicative levels of intention.

2.4.3 Metarepresentation and Text Comprehension

Linguistic text comprehension is an inferential task using decoded text materials as evidence. The inferences involve the writer’s meaning by the reader and geared towards high-order conclusions. In text comprehension, language contains a huge variety of metarepresentational devices such as deep meaning realization and complex understanding whose comprehension interacts with both metalinguistic, that is based on linguistic form and metapsychological abilities, that is based on the content of the expression. This interaction means that the recognition and interpretation of linguistic metarepresentation involves a great deal of pragmatic inference (Astington, Garris & Olson, 1988; Fodor, 1992; Frye & Moore, 1991).

The interaction of metalinguistic and metapsychological abilities is the dividing line between relevance theory and Gricean pragmatics which Wilson (2000) claims

under-estimates the inferential element in comprehension (Bach & Harnish, 1979; Davis, 1991; Kasher, 1998; Grice, 1989). In a similar vein, Sperber (2000) maintains that by triggering mental representations in the audience, coded signals provide the sort of evidence of communicator's informative intention that inferential communication requires. This is adaptable in text comprehension. The writer triggers in the reader mental representation, through the sentences, phrases and clauses, to provide evidence of informative intention (Olaofe & Masembe, 2006; Dalin 1975; Cooper 1993).

Comprehension of meaning, cannot be achieved without the recognition of writer intention to achieve this effect. Sperber (1994) and Davis (1991) indicate that expectations of relevance created in the course of comprehension process may be sophisticated. Three metapresentational strategies are revealed with each requiring an extra layer of metarepresentation. The first one, the simplest, is the surface meaning. Text comprehenders who interpret at the surface level in achieving meaning look for an interpretation that seems relevant enough in achieving meaning. When one interpretation is found, it is assumed to be the intended one and is considered to be the writer's meaning. If the reader does not find any relevant interpretation, no further resources are available for interpretation and communication will fail. In Sperber's (1994) opinion, a surface meaning reader assumes that the writer is both competent and benevolent: competent enough to avoid misunderstanding, and benevolent enough not to lead the reader astray. Suppose Malik writes (16) for Lailah and enters the bathroom, and Lailah found it on the table and read:

(16) I will write you a letter when I am done with the bath.

Three possible interpretations emerge from (16):

- (a) Write you a letter may mean a letter of alphabet for you;
- (b) It could mean a message for you; and
- (c) It may mean a message to you. (16) is an example adapted from Sperber (1994).

If Lailah finds the first interpretation relevant enough and is the intended one, then Malik has written competently. If this interpretation is also a genuine one, then, Malik has written benevolently.

What this means is, a surface meaning reader does not need to think about the writer's thoughts in identifying meaning. The only metarepresentation he engages in is (metarepresents speaker's thoughts) the first linguistic interpretation acceptable. the reader does not reflect further to picture other possible meanings.

A deep meaning strategy is the one that requires an extra layer or degree of metarepresentation referred to as deep meaning hopeful reader. A deep meaning reader assumes the writer to be benevolent enough, but not necessarily competent. In this case, a deep meaning reader does not only take the first interpretation he finds relevant enough and attributes it to the writer. He asks himself on what interpretation the writer might have thought to be relevant enough. This is an extra layer metarepresentation that prevents the deep meaning reader from misunderstanding in two comprehension cases where a surface meaning reader could fail (Sperber, 1994). The first one is accidental relevance. A text interpretation is accidentally relevant if the first interpretation that seems relevant enough to the reader is not the intended one. For

example, if the first interpretation of (16) that Lailah finds relevant enough is one that means a letter of alphabet (16a). Here, Malik could not plausibly foresee Lailah's reason for the choice. The second case is accidental irrelevance. A patent case of this type is when a writer mistakenly misinforms (example, spelling mistake). For example; when Malik reads (17) as response to a note he dropped for Lailah when he did not meet her in her hostel.

(17) I have been torturing in the neighborhood.

If Malik is a surface meaning hopeful reader, he would restrict himself to the linguistically encoded meaning and would therefore not be able to find an acceptable interpretation. Communication will obviously fail. Trying a strategy of a deep meaning hopeful reader, by asking himself what interpretation, Lailah might have thought her sentence would be relevant enough to him, Malik could finally conclude that she must have meant to mean "tutoring" instead of "torturing".

Thus a deep meaning text reader indicates adequate ability to deal with writer incompetence. However, assumption of writer benevolence could still take such a reader away from the real writer meaning. The use of complex understanding strategy is hereby necessary. This strategy allows the reader to cope with the fact that writers are not necessarily always benevolent (Sperber, 1994): writers may intend an interpretation to appear relevant enough without plausibly being so. Just like in (19), Lailah may be lying about where she has been. Here, a deep meaning understanding reader can successfully cope with the spelling mistake but may not realize she is lying. That is, he may think that a benevolent writer cannot intend to misinform him of an idea she knows to be false.

By using complex understanding strategy, Malik would be able to identify Lailah's meaning by asking himself what interpretation does think he will attach to her sentence (expression) to be relevant enough. In the process of identifying her intended interpretation, Malik has to metarepresent Lailah's thoughts about his thoughts (Sperber, 1994).

In simpler terms, using Sperber (1994) model, a surface meaning hopeful text reader need not metarepresent the writer's thoughts altogether when identifying writer meaning. Only the first interpretation that seems relevant enough is taken and treated as the intended one. A deep meaning text reader engages in considering what interpretation the writer might have thought would be relevant enough. This costs an extra layer of metarepresentation (Carnap 1947; Gibbs & Moise, 1997). In this case, the comprehender can cope with situations where the writer tries to be relevant enough, but fails (as in the spelling mistake in 20). Finally, using the complex understanding strategy, the text comprehender considers what interpretation the writer might have thought the reader would think was relevant enough. This is at the cost of a further layer of metarepresentation. Thus, at this level, the reader can cope with deceptive situations (Hernandez-Florez, 1999; Cohen & Olshtain, 1993; Flowerdew, 1994).

The present study makes the above model adaptation of Sperber's (1994). It is useful because the strategies could have implications for the development of text comprehension ability. Therefore, research subjects' ability in surface understanding, deep understanding and complex understanding is observed. The observed differences could make categorization of subjects into complex understanding readers, deep understanding readers and surfacely hopeful readers to boost their capacity in

comprehending a text. Therefore, a relevance-based comprehension procedure adapted from Sperber and Wilson (1986/1995) are followed. In it, the study assumes that a specific text comprehension pattern is suited for the discovery of informative intention of the writer. The procedure defines the relevance of a cognitive input (written material) to a reader as a positive function of the cognitive effect achieved by processing the input, and as a negative function of the amount of effort involved in processing it. Thus every text material conveys a presumption of its own relevance which the reader should seek to find. This may be justified by Sperber and Wilson's (1986/1995) procedure as adapted by the present study. First, a surface meaning reader, deep meaning reader, and a complex understanding one, might follow a route of extended effort in constructing interpretation of a text. The reader stops when the effects achieved are sufficient enough to warrant the presumption of relevance conveyed by the text material. This might be capable of triggering in the mind of the reader ideas in (18a) in that order:

- (18) Malik is a soldier
- (a) Malik readily obeys orders.
 - (b) Malik is dutiful.
 - (c) Malik is always loyal.
 - (d) Malik is a patriot.
 - (e) Malik earns a soldier's pay.
 - (f) Malik wears military uniforms.
 - (g) Malik is a member of the military.

If the sentence (18) is interpreted as conveying (18a – d) and satisfies the expectations of relevance it has itself raised, then it is assumed that the interpretation stops at this point. Therefore (18g), the literal interpretation is not even considered. However, in a different context the sequence in which the elements of interpretation might appear in the mind of the reader will differ. The stopping point of interpretation will be such that the overall interpretation would include (18g) and be regarded literal. Again, suppose that Malik is a soldier was written in a reply to the question “what does Malik do to earn a living”? Automatically, then, (18a – g) would be processed in the reversed order, say from (g) upward. The reader is most likely to stop at (e) or (f). Thus, the resulting interpretation (18g – e) is literal and would not overlap with the metaphorical interpretation in (18a – d) of the same sentence written under a different context. In this respect, the comprehension procedure followed by surface meaning understanding reader, the deep meaning understanding reader and complex understanding readers is the same: follow the path of extended effort until adequate relevance is achieved. This could yield a literal, a loose, or a metaphorical interpretation without the reader necessarily taking notice of the type of interpretation achieved (Sperber & Wilson, 1986/95; Adams, 1973).

The result of this type of interpretation process is an attribution of writer meaning, and therefore metarepresentational. It is the premises (Sperber & Wilson, 1986) in the inference process that need not be metarepresentational which goes against Gricean pragmatics (Levinson, 1983; Neale, 1992). The reader only metarepresent the content of the message. Propositional attitude is then attached.

This model, could be adopted in a study like this for the treatment of research subjects in the metarepresentational group. This is because the model seems comprehensive enough because it provides equal opportunity for subjects in text processing, as the three types of readers: surface meaning reader, deep meaning reader and complex reader follow the procedure. The following steps illustrate how metarepresentational strategies reviewed (Wilson, 1986) could be used in treating subjects in metarepresentational group:

1. Subjects are introduced to the idea of figuring writer's meaning,
2. The three metarepresentational strategies of reading comprehension may be highlighted to students as surface, deep and complex meaning picturing strategies,
3. One strategy could be jointly discussed and exemplified by the teacher and the students. For example,

(19) *Aminu is a square minded child.*

Surface meaning reader would figure the sentence to mean *Aminu has a mind that is square in shape* which does not apply in this context. A deep meaning reader will know that the surface meaning is not reliable and may interpret *Aminu's* mind to be something negative. But the complex understanding of the material would further attribute Aminu's mind to be associated with rigidity and finally interprets the sentence as *Aminu being a rigid person,*

4. The subjects could be guided by the teacher to practise the use of these strategies,

5. They could then be encouraged to evaluate their success using such strategies in a reading comprehension.
6. Subjects could finally be encouraged to use each strategy, in different reading contexts appropriately.

2.4.4 Summary of Metapresentation-Concept, Issues and Effects

The above discussion on metapresentation illustrates and explains how metapresentation works in text comprehension. It also seems reasonable to conclude that if same principles of relevance (Sperber & Wilson, 1986) can be used to explain the mechanism of human text comprehension, metapresentation, indeed, belongs to comprehension spectrum of linguistic communication. It is then identified as having different types of strategies: surface meaning realization, deep meaning realization and complex meaning realization (Sperber & Wilson, 1986). The present study used the three strategies to treat subjects in order to find out the impact of metarepresentational processing strategies on text comprehension.

Table 2.2 presents a summary of metarepresentation in text comprehension.

Table 2.2: Summary of Metarepresentation in Text Comprehension

Metarepresentation in Comprehension	Relevance to the Study
<p>In comprehending a text, both the writer and the reader are deeply engaged in metarepresentation: by writer's being involved in metarepresenting her intended thought and the reader interpreting (metarepresenting) the writer's intention (Sperber and Wilson, 1986).</p>	<p>The complex processes involved in the writer and reader representational relationship is part of the central ideas the present study is concerned with.</p>
<p>* Metarepresentation involves interpretive reanalysis using various strategies such as surface understanding involving surface meaning, deep understanding involving deeper layer of meaning and complex understanding involving higher order meaning achievement as a result of derivation of contradiction (Cartson, 1998).</p>	<p>This process of interpretation could impact on text comprehension after the treatment of subjects using metarepresentational strategies of comprehension- surface understanding, deeper layer understanding and complex understanding strategies.</p>
<p>* Comprehending a text involves human propensity to interpret a text by metarepresenting it in terms of mental states such as belief, intention and desires (Wilson, 2000).</p>	<p>The process would be checked out to determine its effect on comprehension in the present study using the three metarepresentational strategies.</p>
<p>* In attributing writer's meaning, the essential effects intended by the writer cannot be achieved without metarepresenting the intention of the writer to achieve the effects (Sperber and Wilson, 1986).</p>	<p>Deliberate intention by the writer, using certain language expressions, and deliberate intention by the reader, using certain metarepresentational strategies, are involved in comprehension, metarepresentationally. This shows how conscious and strategic metarepresentations is which could have effect on text comprehension.</p>
<p>* Metarepresentation employs strategies such as surface understanding, deeper layer understanding and complex understanding (Wilson, 2000).</p>	<p>At the end of the treatment of subjects using the three metarepresentational strategies in reading comprehension, the impact of this treatment would be compared with the impacts of metacognitive strategies. This include self-evaluation of reading progress, predicting the following idea of a text, using background knowledge to understand written expressions found with the ability to employ one of the strategies and the effects would be useful to the study.</p>

Figure 2.2 highlights metarepresentational reading comprehension process

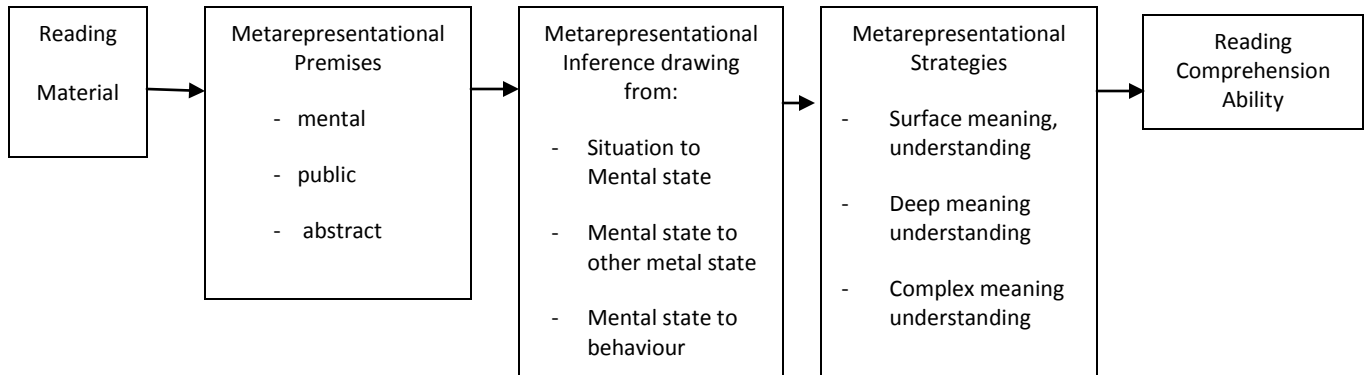


Fig. 2.2: Metarepresentational Reading Comprehension Process

In Fig. 2.2, comprehension process involves interaction among reading material, metarepresentational premises, strategies and inferences to be drawn to achieve comprehension of writer's meaning. The reader first figures out the nature of the text input and then draws inferences from the situation or state of the message. Then a metarepresentational strategy is employed to comprehend the general information implicated.

2.5 Metacognition and Metarepresentation Compared

This section is devoted to an examination of the main features of metacognition and that of metarepresentation. It further examines whether metacognition has metarepresentational structure and properties that may explain similarities between the two constructs. By the end of the discussion, a decision about how divergent or convergent the two constructs are in relation to text comprehension is analyzed.

Researches in theory of mind have speculated that metacognition necessarily involves metarepresentation, that is the second order representation of first – order cognitive contents. Modularists and most theoreticians (see Flavel, 2004) emphasized that attributing knowledge to oneself is made possible by the ability to metarepresent one’s mental state. Although radical simulation theorists such as Gordon (1996) and Rochat (2003) have rejected this view, non-radical simulation theorists assume that decoupling simulations and reasoning across them, rather than reasoning within a simulation is most profound in mind reading capacity (Lamazan, 2002, Lakoff, 1991; Krashen, 1985; Bakar, 2000).

From the conceptual argument, comparison between metacognition and metarepresentation will have to be based on the theoretical imports of the two constructs. First, metacognition is defined as thinking about one’s mental state that is reflected in all the activities by which one tries to predict and evaluate one’s own mental disposition, state and properties for their cognitive adequacy (Proust, 2007). Metarepresentation on the other hand, is a picturing of a mental representation: a higher-order reflection with a lower-order mental representation embedded within it (see Wilson, 2000; Noh, 1998a; Partee, 1973; Saka, 1998; Thomas, 1983).

The two concepts, from the definitions above, indicate that while metacognition is reflexive, metarepresentation is not essentially reflexive. By “reflexivity” is meant the capacity to evaluate and revise one’s cognitive states. This means that, unlike metarepresentation, metacognition relies on normative forms of self-guidance, rather than full-fledged representation of oneself (Canale & Swain, 1980; Leinonen, Ryder, Eliis & Harmond , 2003; Rose & Kasper, 2001; Leech, 1983, Searl, 1969).

Another difference between metacognition and metarepresentation is that while self-mental awareness holds in metacognition in first person case, it does not in metarepresentation. In metacognition, a person is said to know or believe something immediately and understands that he knows it. On the contrary, the same person cannot immediately see what another person knows or believes. A subject's mental contents cannot be seen by another. It can only be inferred through the behavior of the other (Colombo, 1993; Hoffman, 1992; Kasper, 1984; Holtgraves, 1999 and Cook & Liddicoat, 2002).

Shallow processing is never possible in metacognition, while in metarepresentation, it is even common place (Dokic &William; Dokic & Egre, 2008; Takahashi, 1996 and Taguchi, 2003). This leads to another contrast between metacognition and metarepresentation. Unlike metarepresentation, metacognition is always evaluative. Evaluating future states involves in appreciating the efficiency of a given course of action, which means comparing internal resources with objective demand for the task (Nichols, 2003& Conant, 1970).

Metacognition does not require a mental picturing capacity while metarepresentation does. Whereas in metarepresentation a subject needs to conceptualize and represent the concept, metacognition does not have to be conceptually represented; it only has to be exercised, that is simulated by perceiving the mental state only. In this case metacognition does not necessarily involve mental concept and so, does not enjoy inferential promiscuity; which is the capacity to combine inferences and generalize across domains. This reveals that the kind of prediction and evaluation metacognition produces is domain specific which can only

become inferentially rich when metarepresentation is used to describe its outcome through mental concepts (Rosenthal, 2000 Decety, 1997, Perfetti 1998).

For example, if as a young child, Malik does not remember how to get back home from school, Malik will need to find some alternative ways to acquire the information. If this happens when he is an adult, he can obtain inferential knowledge based on his mental concepts. Malik will then be able to infer that his memory loss is alarming, that he needs to see a doctor, train his memory etc. These inferences and the resulting decisions are only accessible to agents able to (conceptually) metarepresent that they have a bad spatial memory (example adapted from Proust, 2007; Levin, 2004).

One difference between metacognition and metarepresentation is recursivity. Recursivity means figuring others' embedded mental states rather than a single individual's in metarepresentation (Gennaro, 2004; Cary & Reder, 2002; Peacocke, 1999; Nudds, 2006). This means that metarepresentation unlike metacognition, relies on syntactical organization of human languages, the property of which admits embedded clauses for attributing meaning to the writer. This study recognizes that metarepresentation is not cognitively demanding as explicated by relevance theory. It is, therefore, implicitly mastered through language use. For example:

(20) Malik knows that Lailah knows that her father knows that her mother knows that her grandfather knows that he is invited for lunch today.

In (20), some elements help in parsing the various attribution of mental states: first, a “mental” state word followed by a syntactic marker (that) introducing an embedded clause signals a new attribution. Second, the different proper names work as

social cues on which to anchor a new attributional verb and new content. Third, the temporal succession of clauses is a cue linguistically available and rehearsable (Cappelen and Lapore, 1997a; Coulman 1986; Davidson, 1968/1984, 1979/1984; McHale, 1978).

On the other hand, metacognition is concerned with prediction, retrodiction and evaluation of one's own mental disposition, states and properties (Bachman, 1990; Vershueren 1999; Hayes & Hatch, 1999; Buck, 2001; Canale, 1983a). This shows that it is clearly practical and content-oriented. Therefore, metacognition is not concerned with varied perspectives on the same content. The only perspective it is concerned with is one's own simulation of proposition. In this case and unlike recursion in metarepresentation, simulating one's simulation of P (proposition) coincides with simulating P; because both simulations according to Proust (2003) run the same dynamic self-model or self mental reflection. This shows that recursive simulation is not available in metacognition and that transparency only seemingly involves recursion (Mey, 1993; Levinson, 1983; Austin, 1962; Quine 1993). It is only when it is verbalized for self justification to others that a subject uses recursion to report his metacognitive states (Hintikka, 1962; Cresswell, 1985; Cresswell, 1973 and Heim & Cratzer, 1998; Roever 2001).

As has been shown, metarepresentation is not involved in performing the type of simulation that metacognition does for evaluating its capacities when engaged in a given task. It could be deduced that metacognition is not inherently metarepresentational and that metarepresentation is not inherently metacognitive (Proust, 2007; Zaitchik, 1990; Leslie & Thaiss, 1992; Evans, 1982; Koike, 1996).

Therefore, metarepresentation and metacognition, as seen above, can only complement each other, but have different specializations in text processing and comprehension. The present study would therefore exploit the difference as a basis for comparing the impact of the two constructs on students written English text comprehension performance.

By their strategies in reading comprehension processing, metacognition and metarepresentation differ. Metacognitive strategies involve organization planning strategies such as identifying text segment, sequence of main ideas and self-monitoring strategies, self-evaluation during reading comprehension. These involve strategies like using background knowledge, guessing later topic, evaluating, distinguishing old and new idea and reading goals awareness. Metarepresentational strategies involved surface meaning understanding realization, deep meaning understanding realization, complex understanding meaning realization. The two different categories of strategies (metacognitive and metarepresentational) would be used in treating two experimental groups respectively by the present study.

Table 2.3 presents a summary of comparison between metacognitive and metarepresentational processing.

Table 2.3: Summary of Comparison between Metacognitive and Metarepresentational Processing

Metacognitive	Metarepresentational
Involves reflectivity (revision of one's cognitive) state	Full-fledged representation
Self-mental awareness holds in first-person (e.g. I know, I understand)	Attribution of others' intention
Evaluation of mental state	Shallow processing of mental state
Perceptual	Conceptual
Not recursive	Recursive
(not concerned with varied perspective of same text content)	(picturing conflicting views of same text content)
Automatic inward monitoring of text meaning.	Deliberate monitoring of text meaning
Strategic inward processing	Strategic outward processing
Unconscious	Conscious
Direct text reflection	Indirect text reflection
Metacognitive strategies include: using background knowledge; personal reading strength; evaluation; reading goals; distinguishing; underlying of main ideas, dates, places and names and guessing later topic.	Metarepresentational strategies include: surface meaning understanding; deep meaning understanding and complex meaning understanding.

2.6 Previous Studies Related to Reviewed Literature

This section discusses studies previously undertaken that relate to the present study. Results and conclusions of the studies would be highlighted and critiqued accordingly, pointing out areas of departure from the present study.

Nicolle (2007) undertook a detailed study on metarepresentational demonstratives in Digo language. The study characterized demonstratives in the language as metarepresentational which occur in conversation and narrative text. The conclusion of the study was that metarepresentational demonstratives in Digo interact with the other types of demonstratives so that a complete description must take account of what motivates the choice of one type of demonstrative over another. This study is clearly different from the present one. Nicolle (2007)'s is particularly concerned with Digo language whereas the present study is concerned with English Language. In essence, the present study investigates the impact of metarepresentational ability on comprehension of English text while Nicolle's (2007) purely investigates demonstratives in Digo language.

Freyal's (2008) study engaged students in metacognitive strategy training for five weeks. The purpose was to determine the effectiveness of systematic direct instruction of multiple metacognitive strategies designed to assist students in comprehending text. The result of the study showed that the students gradually started to think metacognitively about the strategies they could use to improve their reading comprehension. The present study differs from Freyal's (2008) since the present one is comparative and the theoretical framework is different from that of Freyal's (2008). The present would use Freyal's (2008) metacognitive strategies training model but in a prolonged period.

A study aimed at examining comprehension skills differences in the process of word-to-text integration by Perfetti, Chin-Lung and Smeolhofer (2008) concluded that less skilled comprehenders were slow to integrate a word with its preceding context.

Event Related Potential (ERP) method was used in the study. The ERP methods allow word-by-word reading data without explicit responding, while adding the possibility of inferences about some of the processes that occur when a word is identified and connected to its context. The present study does not use ERP methods; and aims at comparing metacognitive and metarepresentational impact on comprehension. The premises of the two studies therefore differ.

Another study was conducted by Van den Broek and Kendeou (2008) on the effects of misconception on on-line comprehension process during reading of science text with an eye towards developing ways to encourage revision of the accurate idea. Two empirical experiments on the on-line processing of refutation and non-refutation science texts by the readers with and without misconceptions related to the topics of the text were conducted. The reason was to determine whether differences in processing practically occur. The results indicated that text that promoted co-activation of misconception and correct information (refutation text) elicited fundamentally different comprehension processes in readers with misconceptions than do the text that did not promote co-activation (non-refutation text). The study is different from the present one in method, purpose, and direction. The two studies are related in finding effects of particular variables on comprehension process. All the same, Van den Broek and Kendeou (2008)'s concept of misconception and correction of information was used in assessing metacognitive metarepresentational performance in the present study.

Kintsch (1986) conducted a study on the presentation of knowledge and the use of knowledge in discourse comprehension. The study showed that word identification in discourse was based on the assumption that knowledge is presented as an associative

network the nodes of which are propositions. Thus comprehension becomes successful when the activation of nodes positively stabilizes. The study did not account, directly, for the evaluative character of comprehension process metacognitively and this draws a distinction between it and the present study. Metarepresentational account of such comprehension process was not equally accounted for in the study.

Olaofe and Masembe's (2006) study on text comprehension used Clause Relational Approach. In this approach, comprehension is guided and developed by providing basic comprehension strategies involving predicting and questioning. The strategies could, according to the study, enrich comprehenders with the ability to monitor their own reading comprehension via visualizing, making connections and self-questioning. Though the study is related to the present study metacognitively, a difference exists in the area of description versus explanation respectively. The present study, again, compares the metacognitive ability with the metarepresentational ability with a view to weighing the distinctive impact of the two constructs on text comprehension respectively. Metacognitive strategies of reading comprehension such as self questioning and making connections analyzed by Olaofe and Masembe (2006) were used in the treatment of metacognitive subjects by the present study.

A landscape model analysis, by Arthur and Diane (2007), adopted from the text processing literature, was run on transcripts of tutoring sessions. A technique was developed to count the occurrence of key physics points in the resulting connection matrix. The point-count measure was found to be correlated with learning. This confirms that landscape model, being memory – based, can be interpreted as a measure of what the students are remembering from the tutoring session on a whole. The study

is said to be a metacognitive one, but different from the present study in the sense that metarepresentation is not involved. The study also rejects Van den Broek (1996) ‘concept order’ which directly accounts for a particular level of measure in comprehension processing.

Kaikonen and Hyona (2008) investigated the influence of a reading perspective on on-line processing and memory of a narrative text. The study examined whether prototypical prior knowledge related to the reading perspective and the transparency of relevance of the text information influence reading and memory of a narrative. The results showed that perspective – related prior knowledge modulated the perspective effects observed in on-line text processing, and that signaling of (ir)relevance help in encoding relevant information. The present study is directly related to this study in areas relating to relevance achievement in text processing. The two studies differ in the sense that the present study pull together different frameworks in analyzing comprehension processes using metacognitive and metarepresentation, while Kaikonen and Hyona’s (2008) does not.

Braten and Stromso (2008) investigated the ways of tackling the problem of how to measure strategy use in reading multiple texts. College students read seven science texts and responded to a survey on their use of strategies and how they processed the texts. Results from the study showed that students processed individual sources and came up with a unified comprehension of the texts. The study is different from the present one because the latter is concerned with single text processing involving metacognitive and metarepresentational strategies use.

Schellengs (2008) conducted a study using 16 high school students to investigate how they comprehend text based on thought aloud while reading the text \. The study concluded that the correlation between think-aloud and reading comprehension was moderate. The study differs from the present one because the former used self-report while the latter used comprehension test after metacognitive and metarepresentational strategies treatment of the subjects.

2.7 Theoretical Framework

The present study is based on cognitive and pragmatic theories of comprehension processing. The frameworks of these theories are directly connected with reading comprehension processing captured in the perspectives of metacognitive and metarepresentational dispositions. Constructionist model of comprehension emphasizes reader's construction of coherent mental picture of textual information. This shows that readers have to use their background knowledge in order to construct a picture of what is read (Ludo & Charles, 2008).

In a different fashion, Associationism views the reader as presenting knowledge as a network of ideas having connections. the connections are activated to find the most relevant ones for achieving meaning (Lock, 1974). Associationism is, thus, grounded in cognitive theory relevant to the present study. Other cognitivists such as Kinstch (1986) describes reading as involving the capacity to construct situation model. The reader creates a picture of the situation in order to process and comprehend a text material. This process also includes using background knowledge to arrive at the situation model of the information.

These cognitive theories are directly connected to both metacognitive and metarepresentational dispositions of the reader. This is the reason for the present study to operate within the cognitive theories framework. The pragmatic theory explaining reading comprehension process deployed in the present study is relevance theory of Sperber & Wilson (1986). Inadequacies of Grice's (1989) account of text interpretation as based on reader's ability to metarepresent writer's intention were debunked. In Grice's framework, the reader does this by assuming that the writer intended the text to satisfy a cooperative principle and maxim of truthfulness. Sperber and Wilson (1986) attempts to deal with this issue by attributing to the reader and writer two types of intention, involving degrees of metarepresentational ability. The first is the informative intention and a higher-order communicative intention (an intention that the reader should recognize the informative intention).

Other pragmatic theories dealing with comprehension processes include Noh's (2000) explanation of metarepresentation in relevance theoretic perspective. The theory provided evidence that relevance theory solve communicative indeterminacies such as irony, metaphor and conditionals. Burton-Roberts (1989) explicates issue relating to pragmatic reanalysis which means reader's interpreting the negation as mentioning a previous statement and objecting to it.

The present study is grounded in the pragmatic theory because explanations of comprehension processing necessary for empirical investigation abound. Relevance theory in particular serves as a binding framework that explains both metacognitive processing and that of metarepresentational strategies. This is because the two concepts

and their strategies can be realized in terms of communication through search for optimal relevance.

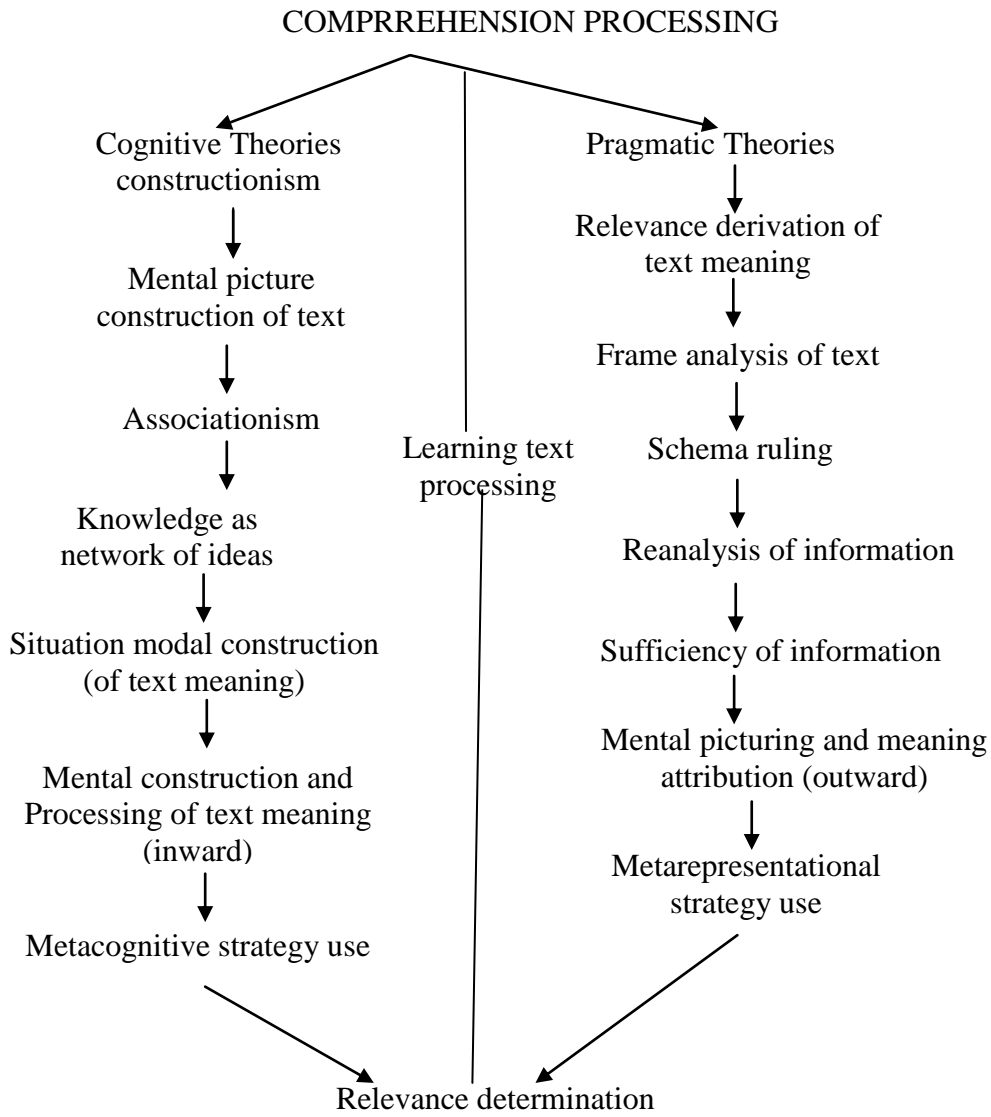


Figure 2.3: Graphic Representation of Theoretical Framework for the Study

2.8 Summary

In this chapter, the study has been open to numerous frameworks for analyzing the concepts of comprehension, metacognition and metarepresentation. By adopting and adapting these frameworks, the study has been able to suggest some unifying concepts and underlying theories that seem to warrant the deliberate formulation of eclectic approach in its operation. In this way, metarepresentation and metacognition have been shown to behave similarly within the framework of relevance theory and frame analysis even though functionally different. Metacognition and its complex structure and processes appear to be automatic perceptual in comprehending a text material. Metarepresentation has been presented as conceptual, deliberate and strategic. The two constructs are said to be strong forms of ostensive communication. Framing is a powerful interpretive mechanism for identifying and analyzing different layers of meaning in comprehending a text.

The chapter shows metacognition and metarepresentation as rich and powerful constructs involved in text comprehension. Therein, detailed analysis of how the constructs work in different areas of text comprehension was provided.

Table 2:3 presents a summary of major discussion by authors and knowledge gained.

Table 2.3: Literature Reviewed: Issues Discussed and Knowledge Gained

Issue Discussed	Knowledge Gained
Cognitive processes underlying text comprehension. Kinstch (1986); Van den Broek (1996); Frayal (2008); Newel (1973); Sperber and Wilson (1986); Chamot and O'malley (1990).	<p>(a) Cognitive process is basic to text comprehension.</p> <p>(b) On-line processing of text determines successful or unsuccessful text comprehension.</p> <p>(c) What it means to comprehend involves complex processes.</p> <p>(d) Produce of comprehension – what is stored in the human mind after reading and comprehending the text. Process of comprehension – the cognitive activities by which the product is constructed. The study would be based on the premise of process of comprehension (the cognitive activities by which comprehension take place) and product of comprehension (what is stored in the mind after reading).</p>
Knowledge presentation and use during text comprehension as discussed by Kinstch (1986).	<p>(a) How the right knowledge about word meanings is activated during text comprehension by matching lexical meaning with sentence proposition.</p> <p>(b) How exactly the right knowledge about a word is activated in the discourse context.</p> <p>(c) The knowledge organization that permits context sensitivity.</p> <p>(d) Awareness about the process of knowledge use in text comprehension.</p>
Metacognition in text comprehension as elaborated by Frayal (2008); Stanovic (2000); Sternberge (2000); Singer et al (1994); Smith (2003); Shahomy (1991); and Shoenfied (1987).	<p>(a) Metacognition has different strategies such as using background knowledge, predicting later topic, using personal strength, evaluating, distinguishing.</p> <p>(b) Metacognition has its properties and functions which are predictive and evaluative.</p> <p>(c) Comprehension is metacognitive.</p> <p>(d) Metacognition is accountable for by relevance theory. Different metacognitive strategies such as: using background knowledge, predicting later topic, using personal strength, evaluating,</p>

	distinguishing would be used in the present study.
Metarepresentation in text comprehension. Sperber and Wilson (1986); Wilson (2000); Scholl (1999).	<p>(a) There are three types of metarepresentational strategies: surface meaning understanding strategy, deep meaning understanding strategy, and complex meaning understanding strategy.</p> <p>(b) Comprehension involves meta-representation.</p> <p>(c) Metarepresentation is not inherently metacognitive in text comprehension.</p> <p>(d) Metarepresentation in text comprehension is conceptual, strategic and conscious. The ability of the metarepresentationally treated subjects to comprehend, conceptually, consciously and strategically was observed in their responses to implied, critical, and interpretive comprehension test question.</p> <p>(e) Even preverbal infants have the capacity to metarepresent thoughts.</p>
Theoretical accounts of metarepresentation.	<p>(a) Gricean (1975) account of metarepresentation through working schemata was found to be inadequate in its explanation of comprehension metarepresentationally because it is based on mutual assumption.</p> <p>(b) Relevance theory of Sperber and Wilson's (1986) accounted for metarepresentation in text comprehension is based on contextual effect.</p> <p>(c) Other frameworks like Gutt's (1991, 1996, 2004, 2005, 1998) and Zhoa and Li (2004) have accounted for metarepresentation in text comprehension to be based on relevance achievement. The present study would use Sperber and Wilson's (1986) Relevance theory involving achieving relevance through mutual manifestness of assumptions.</p>

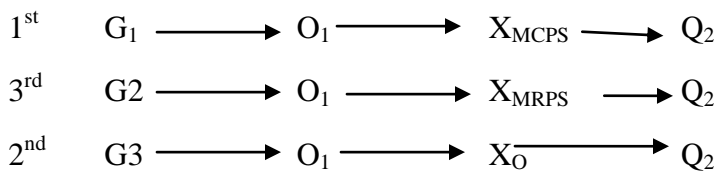
CHAPTER THREE
RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents research methodology used in this study. The chapter comprises the following: research design, population for the study, sample and sampling procedure, instruments for the study, validation of the instruments, data collection procedures, procedure for data analysis and pilot study.

3.1 Research Design

A quasi – experiment was used involving Solomon 4 group design of pre-test-post- test in this study. The fourth group was not consider in the study because it could not yield any data. The experiment involved two treatment groups (metacognitive and metarepresentational). It was considered appropriate because the study involved subject in a natural setting and a homogenous population. Below is diagrammatic representation of Solomon Four Groups design used in the study.



G1 - Group one

G2 - Group two

G3 - Group three

O1 - Pre-test

X_{MCPS} - Metacognitive Processing Strategy

X_{MRPS} - Metarepresentational Processing Strategy

X_0 - No Treatment

Q₂ - Post test

3.2 Population for the Study

The population of this study comprised all the 346 students of the three arms of SS II of Government Secondary School Aminu, Sabon-Gari, all the 280 SSII students of Government Secondary School Bomo, and 248 SS II student of Government Secondary School Kwangila. The total population for the study is 874 students. The schools were chosen because they enrolled students with diverse social, culture, religion, economic and geographical backgrounds. The schools were also suitable for the study because the researcher took part in the team teaching process of the experimental groups. The physical presence of the researcher was necessary since the research design required his involvement in teaching, coordinating and supply of necessary materials for the experimentation.

3.3 Sample and Sampling Procedure

One hundred and fifty students were sampled out from the 446 SSII, Government secondary, Aminu, Sabon-Gari School, one hundred and fifty students were sampled from 280 SS II students of Government Secondary School Bomo and another 150 were sampled out of 192 SS II students of Government Secondary School Kwangila which made three groups of sampled students of one hundred and fifty each. (Krejeie and Morgan, 1970; Feldt, 1973; Nworgu, 1991; Gay, 1992). This sample was taken having considered the homogeneous nature of the problem under study, the focus and the instrument of the study. The sampling was therefore considered sufficient (Nworgu, 1991; Gay, 1992). The random sampling procedure was used in selecting the sampled students.

Table 3.1 presents the population and sample of students from various schools.

Table 3.1: Population and Sample of Students for the Study

School	Population	Sample	Percentage (%)
Government Secondary School, Aminu	346	150	43
Government Secondary School, Kwangila	280	150	54
Government Secondary School, Bomo	248	150	61
Total	874	450	158

3.4 Research Instruments

Research instruments for this study were reading comprehension tests. The tests were prepared by the researcher and had corresponded to the type administered by the school. Three passages from Intensive English Book 2 were used for the tests. A passage titled *Life in the Army* was used for pre-test. The test was meant to measure the homogeneity of the subjects. Another passage *Sugar* was used for phase II test which was the middle of the treatment period. The test was labeled Strategic Comprehension Processing Test (SCPTI). It was designed to elicit responses that captured literal, inferential interpretive, critical and reorganizational levels of reading comprehension derivable from their use of treatment strategies (metacognitive and metarepresentational). At the end of the treatment, a passage on *Economic Success* was used as Phase III or post-test. Phase III test, which served as post-test, was labeled (SCPTII). It was designed for the same purpose as the SCPTI. It was meant to find the extended comprehension processing achievement and be compared with the SCPTI for

possible variation in reading comprehension development. Intensive English book 2 is mente for senior secondary schools. Students were familiar with the book and made them comfortable because they regarded the experiment as normal classroom reading comprehension lessons. Again, the passages in the course book are those similar to the WAEC or NECO passages intended to prepare students for their final examinations. The tests covered both metacognitive tasks such as predicting next idea in the passages, understanding main ideas, self-evaluating comprehension progress while reading, locating details as dates and names, isolate facts from the text. This is because metacognitive reading comprehension restricts its meaning within the context of the text whether pragmatic or linguistic. It also covered metarepresentational tasks such as, evaluating writer's opinions and connecting two ideas in the text through pragmatic and linguistic comprehension questions that covered implied, inferential and critical demands. The reason for such task demand is that metarepresentational reading comprehension such as critical evaluation extends meaning to outside of the context of the text. The pragmatic comprehension questions used were meant to recognize the writer's aim such as making the reader know or do something; and understanding the attitude of the writer in relation to the intended meaning conveyed. The pragmatic questions captured metarepresentational ability. The linguistic comprehension questions such as *what did the writer state as the cause of housing problem? Has the writer suggested solutions to the problem?* were used to capture processing of text on literal semantic level which does not involve pragmatic comprehension such as contextual analysis of implicature.

Table 3.2 below presents the marking scheme to use in assessing reading comprehension of processing areas for the two experimental groups.

Table 3.2: Marking Scheme for Reading Comprehension Processing Ability Test

Comprehension factor	Stage	Operators	Marks obtainable (20%)
Literal meaning response	Idea processing	Linguistic identification	meaning
Interpretive meaning response	Idea processing	Relating idea to everyday life	
Inferential meaning response	Idea Processing	Finding connections between two ideas	
Critical meaning response	Idea processing	Identifying and evaluating opinions in the passage	
Reorganization meaning response	Idea processing	Identifying and linking various information in the passage	
Total			100%

Reorganizational meaning response is added to Williams' (1990) four level of reading comprehension in this study. This is with a view to finding out how students process information from various parts of the text and combine them for additional understanding.

3.5 Validation of Research Instruments

Inter-rater reliability calculated for metacognitive and metarepresentation groups during a pilot study was 0.70. This shows that there is strong co-efficient correlation.

As for content validity of the instruments, the two texts materials (for the pre-test and post-test) and the questions that followed each, represented the SSCE English comprehension examination paper. The face validity was satisfied by the schools' English Language teachers to ensure clarity.

3.6 Procedures for Data Collection

The following procedures were followed in collecting data for the study.

1. Each 150 sampled students was first given a pre-test to ensure homogeneity in their ability level and to find out if they were compatible and comparable. See appendix for the pre-test.
2. The 150 sampled students from Aminu Secondary Second Sabon Gari were given metacognitive strategies of reading comprehension treatment for twelve (12) weeks (see the metacognitive lessons in Appendix II). The 150 sampled students from Bomo were used as control group.
3. 150 sample students from Government Secondary School Kwangila were given metarepresentational strategies of reading comprehension treatment twelve (12) weeks (see the treatment lessons in the Appendix II).
4. The metacognitive group was trained on the seven metacognitive reading comprehension strategies. These are:
 - (i) **Use Strengths:** while reading, I exploit my personal reading strengths in order to better understand the text. If I am a good reader, I focus on the text; if I am good at figures and diagrams. I focus on that information.
 - (ii) **Using Background Information:** While I am reading, I reconsider and revise my background knowledge about the topic; based on the text's content.
 - (iii) **Evaluating:** As I am reading, I evaluate the text to determine whether it contributes to my knowledge or understanding of the subject.

- (iv) **Searching according to the Goals:** I search out information relevant to my reading goals.
- (v) **Reading Goals:** I evaluate whether what I am reading is relevant to my reading goals.
- (vi) **Distinguishing:** As I am reading, I distinguish between information that I already know and new information.
- (vii) **Guessing the later Topics:** I anticipate information that will be presented later in the text.

The training period (twelve weeks) corresponded to the time allocated for reading comprehension in the syllabus so that at least one strategy was thought in a week.

5. The procedure for training the subjects on the strategies was Cognitive Academic Language Approach- CALLA (Chamot & O'malley,1994). This procedure includes Preparation, Presentation, Practice, Evaluation and Expansion. Below is an illustration of how each of the seven strategies above were used using the CALLA procedure.

Strategy Type	Complex Understanding
Preparation	<p>Getting the student to generate meaning beyond linguistic expression. This was done by allowing students to reflect expressions that had different meanings. For example, it is hot today, I will use my campbed today. This means that the speaker was not only trying to tell the audience that he possessed a campbed, but to allow the audience to figure out that he intended to tell that he was going to sleep outside of the room. That he would not bear the heat inside the room.</p>
Presentation	<p>Here teacher presents the students with a short paragraph and discuss the meaning contained in the paragraph to buttress the meaning beneath. For example,:</p> <p style="padding-left: 40px;">The army headquarters and supreme headquarters had strongly advised against embarking on opposed river crossing because of inadequacy of equipment and deficiency in the training of troops for a such semi-specialist operation.</p> <p>The teacher led the students to figure out what the text above was trying to convey. Students were led to identify the situation which they figured as warning against opposed river crossing. They then identified the reason, which was <i>lack of equipment and trained troops</i>. At the end, the teacher led the students to bring out the implication of the text, which was the danger of possible failure if the advice was not heeded. This amounted to complex understanding</p>

Practice	<p>strategy used in reading comprehension which the teacher made the students realized.</p> <p>Here, the students were encouraged to practise the use of complex understanding metarepresentational strategy to evaluate the mental state or implication of the expression. Students figured that failure to consider the advice of the army headquarters would lead to disrespect to army headquarters and possible negative action against defaulter commanders. This meant the writer implied unhappiness with disobeying commanders.</p>
Evaluation	<p>Students evaluated their use of complex understanding strategy in text comprehension as they practised the use of the strategy in figuring out writer's line of thought appropriately. They pointed out that the writer meant to convey the importance of taking the advice of superior leaders and the danger of doing otherwise, using situation processing, implication processing and critically figuring out mental state of the writer (unhappy).</p>

6. The metarepresentational group was trained in the three metarepresentational reading comprehension strategies. The three strategies are:
 - i. Surface meaning understanding strategy which concerns understanding syntactic meaning of expression in the text. For example *Aminu is a soldier*. At the surface level, some students took it to mean Aminu is a member of the army, where Aminu may not necessarily be a soldier but a hard working person.

- ii. Deep meaning understanding strategy which concerns a deeper layer meaning processing by doubting the surface meaning. For example, this strategy required the doubting of Aminu being a soldier without explicit proof.
- iii. Complex meaning understanding strategy which further requires processing of the surface and deep meaning to arrive at the deepest meaning. For example, Aminu in the sentence above, would be understood as being not a soldier but having the qualities of a soldier: hard working.

The training period covered twelve (12) weeks in order that each strategy could be taught sufficiently within the period.

Strategy Type	Complex Understanding
Step I	<p>Getting the student to generate meaning beyond linguistic expression. This was done by allowing students to construct expressions that had different meanings. For example, it is hot today, I will use my campbed today. This means that the speaker was not only trying to tell the audience that he possessed a campbed, but to allow the audience to figure out that he intended to tell that he was going to sleep outside of the room. That he would not bear the heat inside the room.</p>
Step II	<p>Here teacher presents the students with a short paragraph and discuss the meaning contained in the paragraph to buttress the meaning beneath. For example,:</p> <p style="padding-left: 40px;">The army headquarters and supreme headquarters had strongly advised against embarking on opposed river crossing because of inadequacy of equipment and deficiency in the training of troops for a such semi-specialist operation.</p> <p>The teacher led the students to figure out what the text above was trying to convey. Students were led to identify the situation which they figured as warning against opposed river crossing. They then identified the reason, which was lack of equipment and trained troops. At the end, the teacher led the students to bring out the implication of the text, which was the danger of possible failure if the advice was not heeded. This amounted to complex understanding</p>

- strategy used in reading comprehension which the teacher made the students realized.
- Step III Here, the students were encouraged to practise the use of *complex meaning understanding* metarepresentational strategy to evaluate the mental state or implication of expression. Students figured that failure to consider the advice of the army headquarters would lead to disrespect to army headquarters and possible negative action against defaulter commanders. This meant the writer implied unhappiness with disobeying commanders.
- Step IV Students evaluated their use of complex understanding strategy in text comprehension as they practised the use of the strategy in figuring out writer's line of thought appropriately. They pointed out that the writer meant to convey the importance of taking the advice of superior leaders and the danger of doing otherwise, using situation processing, implication processing and critically figuring out mental state of the writer (unhappy).
7. The control group only continued with their normal reading comprehension lesson. The procedure included
- (a) Asking the student to read a passage from Intensive English course book title *River Crossing* for five minutes
 - (b) The teacher explains some word such as *chaos*, *ideal*, *embarked* and *recruited*.

(c) Students were asked to answer some questions from the passage, for example:

1. Why is an opposed river crossing such a difficult operation?
2. What authority does the writer give for his claim that opposed river crossings are difficult?
3. What indications are there that the writer is a knowledgeable military man?

Seven (7) passages were used in the treatment of the subjects. All the passages are contained in Intensive English book. These are

- i. Housing problem in Nigeria
 - ii. The River-Crossing
 - iii. Our Distant Relative, the Whale
 - iv. The Skin
 - v. The Computer Age
 - vi. The Bargo
 - vii. Choosing a Career
8. The control group also treated the same six passages for the period of the experiment using the conventional reading comprehension lesson (see appendix).

9. At the end of week six and week twelve (representing phases II and III respectively) of the treatment, a test was administered to the three groups- metacognitive, metarepresentational and the control groups. The three groups were given one and same reading comprehension test using two passages titled *Sugar and Economic Success* for the two phases respectively. The question on the passages captured the four levels of reading comprehension stated by Williams (1990), literal, interpretive, inferential and critical responses from the subjects. Literal meaning response, such as listing fact, date and location captured metacognitive ability, while interpretive meaning, such as using facts from the text to figure out meaning, implied response such as stating consequence based on the text and critical response, for example, judging information from the text, relate to metarepresentational ability through pragmatic/contextual meaning.
10. The answer scripts of the three groups (metacognitive and metarepresentational and control) were marked using WAEC Marking Scheme on reading comprehension. Each script was marked based on its response to literal, interpretive, inferential and critical meaning demand as marking scheme content.
11. Two teachers who acted as research assistants were responsible for the treatment of the two groups respectively. These research assistants were first trained on the treatment administration before the study commenced. The research assistants were English language teachers of the two treatment schools. Each

teacher of the teachers served in his school so that familiarity was maintained.

Following are the procedure used in training them.

- (i) First the teachers were introduced to the idea of teaching reading comprehension.
- (ii) They were then led to understand the processes involved in comprehension processing and their importance.
- (iii) The teacher who was to teach the metacognitive group was taught the strategies and how to test them using CALLA procedure.
- (iv) The one for metarepresentational group was exposed to metarepresentational strategies and the step to follow in teaching them using CALLA procedure. The training remind for with teachers was two times a week for two weeks.

12. The conventional group follows the normal reading comprehension teaching and learning procedure. They were not treated with any metacognitive or metarepresentational strategies. CALLA procedure of teaching was not followed.

- a. Students were asked to open 179 of Intensive English II and read the passage THE HOUSE PROBLEM IN NIGERIA.
- b. The teacher wrote some difficult words on the board, such as:
 - i. Dwellers
 - ii. Architect
 - iii. Exacerbated

iv. ECOWAS

c. The teacher explained the difficult words to the students.

d. The teacher asked the students to read the passage once again.

e. Students were asked to answer questions that followed:

All the answer scripts were collected and evaluated for data analysis

A Sample Procedure for Vocabulary Development using Metacognitive Strategies

Following are techniques that are used to boost students' vocabulary and its usage in text comprehension processing.

Get the learners to look closely at unfamiliar words in context in order to express what they understand the specific words to mean. Learners can do so by searching words that can instigate deriving the meaning of the unfamiliar word.

Procedure:

1. Let the students read a passage and bring out difficult words they encounter.
2. Encourage them to suggest other words that can be used to derive meaning of the difficult words encountered. This will prompt them to use both *background knowledge* and *searching for reading goals* metacognitive strategies.
3. Ask them to exchange their papers so that they can arrive at correct meaning of the words based on the context in the passage. Here students will be made to use *evaluative strategy*.

Word deletion: Some words can be deleted in a passage and the learners told that words are not necessary in order to explore its meaning in context.

Procedure:

1. Get the students to re-read a passage from their English course book two or three unit back.
2. Ask the students to underline 7 – 10 words in the passage that be deleted and note changes in grammar that might be necessary. Students should work in pairs. This will encourage students to focus on main ideas of passage. It will make them use *distinguishing* metacognitive strategy.
3. Students can read their reduced version of the passage.
4. The teacher shares with class the words that are best left and explain. Allow the students to agree or disagree.

Ghost Definition: The aim here is to make learners cognitively focus on exact meaning of difficult words and the way they are expressed by definition of paraphrases.

Procedure:

1. Use passage appropriate to students ability level.
2. Underline 7 10 words and phrases in the passage. Then, write definitions of these word not in sequential order, at the foot of page. Add two to four definitions of other words. Learners will be made to match meaning according to the context of the passage. This will in turn develop their reading goal and evaluation metacognitive strategies.

Sample Procedure for Vocabulary Development using Metarepresentational Strategies

Open Categorization: To encourage students create and categorize vocabulary. For example:

1. Encourage students to pick up the words to be used or say them verbally.
2. Get students to categorize words in context. For example, words like carpentary, farming, can be categorized under the word *occupation* in a passage titled *Choosing a Career in Intensive English Book 2*. Learners' conceptual metarepresentation are eventually developed, from deep to complex processing of words.
3. Ask student to find more words and categorize them

Guide Categorization

Nice Words:

1. Give students the words to be reviewed. Ask them to pick three they like and thre they don't like. Allow them time to think.
2. Let each student tell why he likes or dislike particular words.
This will make students to picture a situation in which a target word is used and why it is used in the passage, attaching a particular emotion against it.

3.7 Pilot Study

A pilot study was conducted in Government Secondary Funtua, in order to test the reliability and validity of the research instruments of the study. It was a public school that shared common academic and social character with most public schools in Zaria.

Eight students were grouped into two equal number after a pre-test was given to them. Four students for metacognitive training in text comprehension and four for metarepresentational training in text comprehension. The two groups were trained using CALLA strategy training procedure for two weeks. The final day of the treatment was

used for a text comprehension test for both groups with questions on the five levels of reading comprehension: literal, interpretive, inferential, critical and reorganizational. The t-test independent was used to calculate the impact of metacognitive ability and metarepresentational abilities with a view to comparing their impacts on text comprehension. From the two types of results obtained, metacognitive group showed significant improvement over the metarepresentational group. This proved the effectivity, reliability and adequacy of the study instruments.

3.8 Method and Procedure for Data Analysis

This study employed t-test independent and dunnet tests to test the research hypotheses. T-test was used in order to find the impact of the treatment while dunnett-test was used because two treatment groups were compared with only one control group. It should be recalled that dunnet-test was used in this study as suggested by Roscoe (1970). Each research question was answered using both dunnet-test and t-test. The scores were ranged as zero (0%), low (1.33%), middle (34 to 66%) and high (67 to 100%) at each phase of the treatment. Results obtained from the pre-test were regarded as phase I results. Phase II indicates results of the test administered at the middle of the experiment while Phase III refers to results derived from the final test which was at the end of the treatment.

Subjects' scores at every phase of the treatment were analysed in frequencies, average and percentage terms. Based on these, the number, average and percentage of low, middle and high scores were obtained and presented. After comparisons between phases, based on low, middle and high scorers' performance profile of metacognitive group, quantitative data analysis was undertaken. The same happened to

metarepresentational and conventional groups. The aim was to find any development in students reading performance within group level and compare the three groups' performance (metacognitive, metarepresentational and conventional) by phases.

Qualitative analyses were undertaken to support the quantitative data presented. Excerpts from high, middle and low performers' answer scripts answer at phases I, II and III were used for the analyses bringing out variations, improvement and problem areas of their responses. This provided grounds for supporting the quantitative data analysed.

The analyses were based on the scores obtained at the beginning, middle and end of treatment period. These statistical instruments were used to analyze and interpret each of the research questions. Therefore every level of analysis was based on null hypotheses stated in (1.4).

The level of significance adopted for all test of hypotheses in the study was $\alpha = 0.05$

3.9 Summary

The population in this study comprised 446 students. Out this number, 300 were selected as research sample through simple random sampling procedure. Text comprehension tests were the instruments used for data collection. The statistical techniques for the study were t-test independent, dunett-test, and percentile rank. The research instruments were administered by the researcher and two research assistants. Data collected for the study were treated using metacognitive and metarepresentational strategies training following CALLA procedure. Five levels of reading comprehension

(literal, inferential, interpretive, reorganisational and critical) were used to measure text comprehension performance.

CHAPTER FOUR

DATA PRESENTATION AND INTERPRETATION

4.0 Introduction

The data gathered for this study are presented, analyzed and interpreted in this chapter. Apart from descriptive and inferential statisticals used in portraying pattern and distribution of scores for further analysis, qualitative analysis was undertaken to prove the results beyond the statistical level. Every level of analysis was based on null hypothesis stated (1.4). Standard contingency tables were used to show means, percentages and T-test. The level of significance adopted for all tests of hypotheses in the study was $\alpha = 0.05$. The overall findings, discussion of results and a summary of the chapter followed on.

4.1 Metacognitive and Conventional Processing Strategies: Their Effect on Students' Reading Comprehension Performance

This section highlights the data collected in respect of metacognitive processing strategies and their effects on students' reading comprehension performance. Instructional phases (beginning, middle and end) were used to show variations and level of students' performance.

4.01 Metacognitive and Conventional Processing Strategies Groups' Reading Comprehension Performance

Table 4.01 presents the overall scores of the metacognitive processing strategies treatment group in phases.

Table 4.01

Summary of Metacognitive Processing Group's Overall Reading Comprehension scores.

Metacognitive Group

Level	Score Range	Phase I			Phase II			Phase III		
		No	Avg Score	%	No	Avg. Score	%	No	Avg. score	%
Zero	0	57	0.0	38.0	29	0.0	19.3	6	0.0	4.0
Low	1 – 33	74	12.9	49.3	104	12.3	69.3	97	17.6	64.7
Middle	34 -66	18	45.2	12.0	15	43.7	10.0	46	43.4	30.6
High	67 – 100	1	67.0	0.7	2	69.5	1.4	1	70.0	0.7
Total		150	125.1	100	150	125.5	100	150	131.0	100

Table 4.01 shows that metacognitive processing group did not perform impressively in reading comprehension at phase I; that is before treatment. Majority of them fell within the range of low performers (1 – 33% scores obtained). At phase II and III where metacognitive processing strategies were given improvement in students' reading performance was observed (125.5 and 131.00 total average score respectively). This indicated that metacognitive processing strategies had impact on students' reading comprehension performance.

Table 4.02 presents the overall scores of the conventional comprehension processing group in phases.

Table 4.02: Summary of conventional comprehension processing group's reading comprehension performance.

4.02: Conventional Group

Level	Score Rg.	Phase I			Phase II			Phase III		
		No	Avg Score	%	No	Avg. Score	%	No	Avg. score	%
Zero	0	48	0.0	32.0	39	0.0	26.0	50	0.0	33.3
Low	1 – 33	102	7.6	68.0	111	8.0	74.0	96	9.5	64.0
Middle	34 -66	-	-	-	-	-	-	4	36.5	2.7
High	67 – 100	-	-	-	-	-	-	-	-	-
Total		150	7.6	100	150	8.0	100	150	46.0	100

In Table 4.02, it is shown that none of the students in conventional reading processing group scored up to 67% which is the range of high scorers across phases. No student scored up to 34 in both phase I and II, that is, within the middle range scorers. It was at phase III that four students, only, fell within the range of middle scorers (34 – 66%). Except for these four students, all the conventional processing group fell within either zero or low range of scorers (48, with average score of 0.0 and constituted 32.0% and 102, with average score of 7.6 and made 68% of the total number of subjects, respectively). Retrogression in reading performance was also observed as the number of students who scored zero increased at phase III. This indicated that there was negative fluctuation in the reading performance of the conventional reading processing group. The results also showed that conventional reading processing did not help students in reading comprehension performance.

4.03 Metapresentational and Conventional Processing Strategies: their Effect on Students' Reading Comprehension Performance

Table 4.03 presents the overall scores of the metapresentational processing strategies treatment group in phases

Table 4.03

Summary of Metapresentational Processing Group's Reading Comprehension Performance.

4.03: Metapresentational Group

Level	Score Range	Phase I			Phase II			Phase III		
		No	Avg Score	%	No	Avg. Score	%	No	Avg. score	%
Zero	0	62	0.0	41.3	26	0.0	17.3	-	-	-
Low	1 – 33	82	13.5	54.7	107	11.8	71.3	53	23.7	35.3
Middle	34 -66	6	43.8	4.0	17	47.3	11.4	93	46.3	62.0
High r	67 – 100	-	-	-	-	-	-	4	71.8	2.7
Total		150	57.3	100	150	59.1	100	150	141.8	100

Table 4.03 indicates that metapresentational processing strategies group started poorly in their reading performance at phase I (57.3 total average score), before treatment. Improvement in reading comprehension performance was observed at phase II, when the metapresentational processing strategies treatment began (59.1 total average score). Further reading improvement was equally observed at phase III when the treatment continued (141.8 total average score). This means that metapresentational processing strategies treatment had impact on students' reading comprehension performance.

Table 4.04 presents the overall scores of the conventional comprehension processing group in phases.

Table 4.04. Summary of conventional comprehension processing group's reading comprehension performance

4.04: Conventional Group

Level	Score Rg.	Phase I			Phase II			Phase III		
		No	Avg Score	%	No	Avg. Score	%	No	Avg. score	%
Zero	0	48	0.0	32.0	39	0.0	26.0	50	0.0	33.3
Low	1 – 33	102	7.6	68.0	111	8.0	74.0	96	9.5	64.0
Middle	34 -66	-	-	-	-	-	-	4	36.5	2.7
High	67 – 100	-	-	-	-	-	-	-	-	-
Total		150	7.6	100	150	8.0	100	150	46.0	100

In Table 4.04, it is shown that none of the students in conventional reading processing group scored up to 67% which is the range of high scorers across phases. No student scored up to 34 in both phase I and II, that is, within the middle range scorers. It was at phase III that four students fell within the range of middle scorers (34 – 66%). Except for these four students, all the conventional processing group fell within either zero or low range of scorers (48, with average score of 0.0 and constituted 32.0% and 102, with average score of 7.6 and made 68% of the total number of subjects, respectively). Retrogression in reading performance was also observed as the number of students who scored zero increased at phase III. This indicated that there was negative fluctuation in the reading performance of the conventional reading processing group. The results also showed that conventional reading processing did not help students in reading comprehension performance.

4.05 Metacognitive, Metarepresentational and Conventional Reading Comprehension Processing Performance Compared

Table 4.05 presents the overall scores of the metacognitive, metarepresentational and conventional reading comprehension processing groups in phases.

Table 4.05: Overall Students' Performance in the various Groups

No	Level	Range	Phase I			Phase II			Phase III		
			No	Avg.	%	No	Avg.	%	No	Avg.	%
			Sc	Sc	Sc	Sc	Sc	Sc	Sc	Sc	
1.	Zero Level:										
	Metarepresentational	0	52	0.0	41.3	26	0.0	17.3	00	0.0	0.0
	Metacognitive		57	0.0	38.0	29	0.0	19.3	06	0.0	4.0
	Conventional		48	0.0	32.0	39	0.0	26.0	50	0.0	33.
2.	Low Level:										
	Metarepresentational	1 – 33	82	13.5	54.7	107	11.8	71.3	53	23.7	35.3
	Metacognitive		74	12.9	49.3	104	12.3	69.3	97	17.6	64.7
	Conventional;		102	7.6	68.0	111	8.0	74.0	96	9.5	64.0
3.	Middle Level:										
	Metarepresentational	34-66	06	43.8	4.0	17.	47.3	11.4	93	46.3	62.0
	Metacognitive		18	45.2	12.0	15	43.7	10.0	46	43.4	30.6
	Conventional		00	0.0	0.0	00	0.0	0.0	04	36.5	2.7
4.	High Level:										
	Metarepresentational	67-100	00	0.0	0.0	00	0.0	0.0	04	71.8	2.7
	Metacognitive		01	67.0	0.7	2	69.5	1.4	01	70.0	0.7
	Conventional		00	0.0	0.0	00	0.0	0.0	00	0.0	0.0
Total			450	190	300	450	191.2	300	450	318.8	300

Table 4.05 shows that while there was successive decrease in the number of students who scored zero in metacognitive processing strategies group (57 – 29 – 6), reverse was the case for conventional group (48 – 39 – 50). A decrease was found at phase II (39).

In the same vein, metarepresentational processing strategy group's zero reading comprehension performers was minimized at phase II and totally not found at phase III.

This contrasted sharply with conventional reading comprehension processing group's scores which had successive increase in the number of zero scorers (39 – 50).

The results also indicated that while the number of low scorers (1 to 33) increased at phase II as a result of the decrease in zero scoring in metacognitive group, it was not the case with the conventional group (74 – 104 – 97 versus 102 – 111 – 96). No student in conventional group fell within middle and high range (34 to 66% and 67 to 100% respectively) at phases I, II and III, for high range and phases I and II for middle range. This was not the case with both metacognitive and metarepresentational groups in which scores were obtained in all the phases except for phases I and II of the high range scores of metarepresentational group. The analysis showed that metacognitive processing group scored progressively higher than conventional processing group across phases (see Table 4.01 and 4.02 average scores = 125.1 to 125.5 to 131.0 versus 7.6 to 8.0 to 46.0 respectively). Equally, metarepresentational processing group scored higher than conventional processing group across phases (see Table 4.03 and 4.04 total average scores = 57.3 to 59.1 to 141.8 versus 7.6 to 8.0 to 46.0 respectively) in phase I, II and III respectively.

4.2 Metacognitive and Conventional Groups' Reading Comprehension Performance at Sub-Skill Levels

Table 4.06 presents the overall scores of the metacognitive reading comprehension processing group's strategies performance at reading sub-skill levels by phases.

Table 4.06: Metacognitive Group's Reading Comprehension Processing Performance at Sub-Skill Levels

	Phase I			Phase II			Phase III		
	No	Avrg. Sc	%	No	Avrg. Sc	%	No	Avrg. Sc	%
Literal									
High Scorers	28	3.04	35.42	9	3.22	15.03	11	3.18	15.22
Moderate Scorers	33	2.00	27.50	23	2.00	23.83	56	2.00	48.70
Low Scorers	89	1.00	37.08	118	1.00	61.14	83	1.00	36.08
		6.04	100		6.22	100		6.18	100
Inferential									
High Scorers	13	3.08	22.35	10	3.10	14.76	9	3.11	14.89
Moderate Scorers	2	2.00	2.23	39	2.00	37.14	19	2.00	20.21
Low Scorers	135	1.00	75.42	101	1.00	48.10	122	1.00	64.90
		6.08	100		6.10	100		6.11	100
Critical									
High Scorers	10	3.10	17.13	8	3.00	12.83	17	3.29	26.07
Moderate Scorers	10	2.00	11.05	21	2.00	22.46	25	2.00	23.70
Low Scorers	130	1.00	71.82	121	1.00	64.71	106	1.00	50.23
		6.10	100		6.00	100		6.24	100
Interpretive									
High Scorers	24	3.08	33.64	9	3.44	16.57	3	3.33	5.95
Moderate Scorers	20	2.00	18.18	15	2.00	16.04	11	2.00	13.10
Low Scorers	106	1.00	48.18	126	1.00	67.39	136	1.00	80.95
		6.08	100		6.44	100		6.33	100
Organization									
High Scorers	15	3.07	23.84	10	3.00	15.46	8	3.38	14.67
Moderate Scorers	12	2.00	12.44	24	2.00	24.74	15	2.00	16.30
Low Scorers	123	1.00	63.72	116	1.00	59.80	127	1.00	69.03
		6.07	100		6.00	100		6.38	100

Results of Table 4.06 showed that the highest average score obtained (3.29) fell within the critical level of comprehension, constituting 26.07% of metacognitive processing strategies group. Average achievers' did well at literal level of reading comprehension at phase III (2.00 average score, 48.70%) whereas low achievers performed more on interpretive level of reading comprehension at phase III (average score 1.00, 80.95). thus, the result reveal that metacognitive processing strategies had impact on students' reading comprehension.

Table 4.07 presents the overall scores of conventional group's performance at reading sub-skill level by phases.

Table 4.07: Conventional Group's Reading Comprehension Processing Performance at Sub-Skill Levels

	Phase I			Phase II			Phase III		
	No	Avrg. Sc	%	No	Avrg. Sc	%	No	Avrg. Sc	%
Literal									
High Scorers	3	3.00	3.47	6	3.15	17.45	4	3.00	6.35
Moderate Scorers	19	2.00	21.97	35	2.00	41.50	31	2.00	32.80
Low Scorers	129	1.00	74.56	109	1.00	41.05	115	1.00	60.85
		6.00	100		6.15	100		6.00	100
Inferential									
High Scorers	2	3.00	3.73	3	3.00	12.50	6	3.17	11.11
Moderate Scorers	6	2.00	8.70	31	2.00	19.04	8	2.00	9.36
Low Scorers	141	1.00	87.57	115	1.00	68.46	136	1.00	79.53
		6.00	100		6.17	100		6.00	100
Critical									
High Scorers	4	3.00	7.23	10	3.17	13.75	8	3.00	13.64
Moderate Scorers	8	2.00	9.64	25	2.00	17.25	10	2.00	11.35
Low Scorers	138	1.00	83.13	115	1.00	69.00	132	1.00	75.00
		6.00	100		6.17	100		6.00	100
Interpretive									
High Scorers	2	3.00	3.80	8	3.00	15.41	3	3.00	5.56
Moderate Scorers	4	2.00	5.06	10	2.00	7.56	6	2.00	7.41
Low Scorers	144	1.00	91.14	132	1.00	77.03	141	1.00	87.03
		6.00	100		6.00	100		6.00	100
Organization									
High Scorers	1	3.00	1.88	7	3.00	21.69	2	3.00	3.66
Moderate Scorers	8	2.00	10.00	40	2.00	12.16	10	2.00	12.19
Low Scorers	141	1.00	88.12	103	1.00	66.15	138	1.00	84.15
		6.00	100		6.00	100		6.00	100

Table 4.07 indicated that the highest performance among the conventional reading comprehension students was at inferential level of comprehension (3.17 average score). The middle range performers as Table 4.07 showed, achieved highly at literal level of reading comprehension (2.00 average score, 32.80%). The low scorers performed better at interpretive level of comprehension (1.00 average score, 87.03%). The results, thus, mean that conventional reading comprehension did not have much effect on students' reading comprehension as compared with metacognitive processing strategies of reading comprehension.

Table 4.08 Metarepresentational and Conventional Groups' Reading Comprehension Performance at Reading Sub-Skill Levels

Table 4.08 presents the overall scores of metarepresentational group's reading comprehension processing performance at reading sub-skill levels by phases.

Table 4.08: Metarepresentational Group’s Reading Comprehension Processing Performance at Sub-Skill Levels

	Phase I			Phase II			Phase III		
	No	Avrg. Sc	%	No	Avrg. Sc	%	No	Avrg. Sc	%
Literal									
High Scorers	5	3.00	7.94	11	3.18	18.33	3	3.66	5.08
Moderate Scorers	31	2.00	32.80	17	2.00	17.80	23	2.00	25.41
Low Scorers	112	1.00	59.26	122	1.00	63.87	124	1.00	68.51
		6.00	100		6.18	100		6.66	100
Inferential									
High Scorers	4	3.00	7.14	6	3.16	10.61	9	3.11	14.43
Moderate Scorers	10	2.00	11.91	16	2.00	17.88	25	2.00	25.77
Low Scorers	136	1.00	80.95	128	1.00	71.51	116	1.00	59.80
		6.00	100		6.16	100		6.11	100
Critical									
High Scorers	4	3.00	7.02	13	3.23	21.65	25	3.29	46.18
Moderate Scorers	13	2.00	15.20	15	2.00	15.46	19	2.00	15.26
Low Scorers	133	1.00	77.78	122	1.00	62.89	96	1.00	38.55
		6.00	100		6.23	100		6.29	100
Interpretive									
High Scorers	9	3.00	14.43	13	3.00	21.67	6	3.50	12.14
Moderate Scorers	19	2.00	20.33	4	2.00	4.44	8	2.00	9.25
Low Scorers	122	1.00	65.24	133	1.00	73.89	136	1.00	78.61
		6.00	100		6.00	100		6.50	100
Organization									
High Scorers	10	3.00	16.04	5	3.40	9.60	10	3.00	16.22
Moderate Scorers	17	2.00	18.18	15	2.00	16.95	15	2.00	16.22
Low Scorers	123	1.00	65.78	130	1.00	73.45	125	1.00	67.56
		6.00	100		6.40	100		6.00	100

What obtained in Table 4.08 showed that students' critical level of reading comprehension in metarepresentational strategy group performed higher in term of number and scores. The average score of 3.29 with an increased number of 25 subjects which made 46.18% in phase III contrasted with phase II where the subjects performed less (3.23 average score and 13 students only). This means that metarepresentational processing strategies had impact on students' reading comprehension performance.

Table 4.09 presents the overall scores of conventional group's performance at reading sub-skill level by phases.

Table 4.09: Conventional Group's Reading Comprehension Processing Performance at Sub-Skill Levels

	Phase I			Phase II			Phase III		
	No	Avrg. Sc	%	No	Avrg. Sc	%	No	Avrg. Sc	%
Literal									
High Scorers	3	3.00	3.47	6	3.15	17.45	4	3.00	6.35
Moderate Scorers	19	2.00	21.97	35	2.00	41.50	31	2.00	32.80
Low Scorers	129	1.00	74.56	109	1.00	41.05	115	1.00	60.85
		6.00	100		6.15	100		6.00	100
Inferential									
High Scorers	2	3.00	3.73	3	3.00	12.50	6	3.17	11.11
Moderate Scorers	6	2.00	8.70	31	2.00	19.04	8	2.00	9.36
Low Scorers	141	1.00	87.57	115	1.00	68.46	136	1.00	79.53
		6.00	100		6.17	100		6.00	100
Critical									
High Scorers	4	3.00	7.23	10	3.17	13.75	8	3.00	13.64
Moderate Scorers	8	2.00	9.64	25	2.00	17.25	10	2.00	11.35
Low Scorers	138	1.00	83.13	115	1.00	69.00	132	1.00	75.00
		6.00	100		6.17	100		6.00	100
Interpretive									
High Scorers	2	3.00	3.80	8	3.00	15.41	3	3.00	5.56
Moderate Scorers	4	2.00	5.06	10	2.00	7.56	6	2.00	7.41
Low Scorers	144	1.00	91.14	132	1.00	77.03	141	1.00	87.03
		6.00	100		6.00	100		6.00	100
Organization									
High Scorers	1	3.00	1.88	7	3.00	21.69	2	3.00	3.66
Moderate Scorers	8	2.00	10.00	40	2.00	12.16	10	2.00	12.19
Low Scorers	141	1.00	88.12	103	1.00	66.15	138	1.00	84.15
		6.00	100		6.00	100		6.00	100

Table 4.09 indicated that the highest performance among the conventional reading comprehension students was at inferential level of comprehension (3.17 average score). The middle range performers as Table 4.09 showed, achieved highly at literal level of reading comprehension (2.00 average score, 32.80%). The low scorers performed better at interpretive level of comprehension (1.00 average score, 87.03%). The results, thus, mean that conventional reading comprehension did not have much effect on students' reading comprehension as compared with metacognitive processing strategies of reading comprehension.

4.3 Comparison of Metacognitive Processing Strategies Score Range by Phases

Table 4.10 presents comparison of the overall scores of metacognitive group at phase I and phase II.

Table 4.10: Metacognitive Processing Strategies Phases I and II Scores

Level	Phase I			Phase II		
	No	Avg. Scor	%	No	Avg. Scor	%
Zero	57	0.0	38.0	29	0.0	19.3
Low	74	12.9	49.3	104	12.3	69.3
Middle	18	45.2	12.0	15	43.7	10.0
High	1	67.0	0.7	2	69.5	1.4
150		125.1	100	150	125.5	100

Table 4.10 showed metacognitive group's reading comprehension performance at phase I where metacognitive strategies treatment was done. At phase I, where there was no treatment of the subjects, comprehension performance was poor. The number of students that scored zero (57) was more than those that scored zero at phase II (29).

This showed improvement in students' reading comprehension performance. The improvement was caused by the treatment of subjects with metacognitive strategies of reading comprehension processing. The reduction of the number of students that scored zero led to the increase in the number students of students in the low range scorers at phase II. Middle range scorers numbered 18 at phase I, before treatment constituting. At phase II, after metacognitive strategies treatment, was effected, the number dropped to 15. Within the high range score, only one (1) student fell within the range with average score. At phase II the number rose to two (2).

Results in Table 4.10 indicated positive impact of metacognitive strategies of reading comprehension processing on students reading comprehension performance. This was revealed by the increase (positively) in number, average and percentage of students in reading comprehension performance development at phase II.

Table 4.11 presents a comparison of the overall scores of metacognitive group at phase II and phase III

Table 4.11: Overall Scores of Metacognitive Group's Phases II and III Compared

Level	Phase II			Phase III		
	No	Avrg.Scor	%	No	Avrg.Scor	%
Zero	29	0.0	19.3	6	0.0	4.0
Low	104	12.3	69.3	97	17.6	64.7
Middle	15	43.7	10.0	46	43.4	30.6
High	2	69.5	1.4	1	70.0	0.7
	150	125.5	100	150	131.0	100

Table 4.11 exposed a decrease in the number of students that score zero in metacognitive strategies treatment group. The number of students at phase II dropped to 6 constituting 4.0%. This buttressed the fact that the treatment worked well. Students at the low range score in phase II fell down to some extent at phase III. The reduced number of students in the low range at phase III moved down to the middle range scorers. This promotive trend indicates the efficiency of metacognitive strategy treatment in boosting students' reading comprehension processing performance. A particular decrease was noticed at high range scores. The two (2) high scorers at phase II reduced to one (1) at phase III, but the average score increased to 70.0 against 69.5 at phase II.

All together, the results showed the success of metacognitive strategies of processing reading comprehension, treatment. This was evident as the scores in Table 4.11 indicated scores, number of students, and percentage movements and variations favour of positive reading comprehension processing performance of students.

Table 4.12 presents a comparison of the overall scores of metacognitive group at phase I and III.

Table 4.12: Overall Scores of Metacognitive Group: Phase I and III Compared

		Phase I			Phase III		
Level	No	Avrg.Scor	%	No	Avrg.Scor	%	
Zero	57	0.0	38.0	6	0.0	4.0	
Low	74	12.9	49.3	97	17.6	64.7	
Middle	18	45.2	12.0	46	43.4	30.6	
High	1	67.0	0.7	1	70.0	0.7	
		150	125.1	100	150	131.0	100

In Table 4.12, reading comprehension processing performance difference between phases I and III of metacognitive group merged. Students who scored zero before metacognitive strategies treatment (phase I) dropped drastically at phase III. This was why the low range scores' number increased. Positive development was also observed in students' reading comprehension within the middle range scorers. Their number, at phase II, rose considerably. High range score accommodated only one (1) student at phase I, but the same student remained the only one at phase III but thus the average score increased.

Generally, metacognitive strategies of reading comprehension processing showed positive impact on students' reading comprehension performance. This was evident as Table 4.10 analytical comparisons of scores between phase II and phase III indicated. It is also further substantially by evidence from students' scripts.

Excerpts from metacognitive students' scripts revealed how metacognitive processing strategies of reading comprehension had impact on students' reading comprehension performance at phase II. After treating the subjects with the seven metacognitive strategies at phase II, students' responses indicated progress in reading comprehension achievement. Consider the answer to a question demanding critical processing by a metacognitive subject of high range score at phase II.

(1) **Question:** *From what you have read, do you think the disease is curable or not? Why?*

Answer: *You can treat the disease because there is tablet medicine for it.*

The respondent used "evaluation" strategy to deduce that since "*there is a tablet for it*", then the disease is curable. The proposition that *you can treat the disease* was critically processed as an independent conclusion by the respondent. The proposition was critically defended by a supplied reason introduced by "because *there is tablet for it*".

At phase I where metacognitive strategies were not taught, the student could not process the passage well as to answer a question demanding critical response, thus:

(2) **Question:** *What kind of a commander do you think the writer was?*

Answer: *The head of all his superior officers in his unit and the area command in Ibadan.*

Because there were no appropriate processing strategies, the respondent could not answer the question critically at phase I as the answer indicated above. The respondent wrongly processed "what kind" by constructing "what position" the commander occupied or "who the commander was". That was why the answer in (2) above was wrong. This showed that whereas the respondent's poor comprehension

processing strategies led to wrong answer to a critical question at phase I, reverse was the case at phase II. The answer was rightly processed using *evaluative* metacognitive strategy, at phase II, after the treatment. In this case, metacognitive strategies of reading comprehension processing treatment had impact on students' reading comprehension performance.

At phase III the metacognitive processing strategy that worked for students at high range score (67 – 100%) was critical evaluation strategy. A sample script of a high range scorer illustrates this thus:

(3) **Question:** *Why do you like or dislike this passage?*

Answer: *I like this passage because it is enlightenment about factors that help us get success in our life like good determination.*

The respondent was able to deduce, by processing the content of the text critically, that he/she liked the passage. This was evidenced and proved by the reason for liking the passage. Suggesting reason was a result of applying “evaluation” metacognitive strategy to arrive at “because it is enlightenment about factors that help is get success”.

The respondent could not answer the question critically at phase I, due to lack of exposure to appropriate metacognitive processing strategies. For this reason, the respondent processed the text, the question and the answer wrongly. As metacognitive strategy treatment reached phase III, the same subject was now able to process a text and critically comprehend it by using evaluation strategy.

Script analysis of students' response to comprehension question above indicates that there was considerable impact of metacognitive strategies treatment on students' reading comprehension processing because the respondent was able to answer

appropriately using metacognitive processing strategies. Comparison of high range scorer's answer of metacognitive group at phases I and II proved the scored obtained in table 4.06 above.

Reading comprehension progress observed among the middle range scorers (34 – 66%) of metacognitive group was due to literal processing of the text. The metacognitive strategy that led to the literal comprehension was *using personal reading strength*. That was the strategy that worked for the middle range scorers at phase III. Excerpt from the script of a middle range scorer, below, clarifies the stated finding above.

(4) **Question:** *State two factors that facilitate success.*

Answer: *A man born lucky is a factor. Another factor is if one have determination.*

The ability of the respondent to supply the answers correctly was based on the application of *using personal reading strength* metacognitive strategy. This, the respondent did, by possibly underlining particular word or group of words as propositional head in the text, to capture a point. Thus, *born lucky* must have been represented and constructed by the reader as a point of relevance in the text. The respondent further personally indulged in finding another point that served as a factor for success thereby capturing the expression *determination*. The respondent used the strategy to figure out the stated facts (factors) literally in the passage and answered the question. This means that it was *using personal reading strength* that worked for the respondent at phase III. Other strategies like *evaluation* did work well as literal did

since most of the middle range scorers performed better at literal comprehension level (48% sees table 4.05 above).

In the same manner, middle range scorers at phase I processed the passage literally to perform better only at literally demanding questions. Consider the question and answer from the script of a middle range scorer of metacognitive group at phase I.

(5) **Question:** *Name two barriers to friendship that existed among soldiers.*

Answer: *The barriers to friendship among the soldiers were authoritarian behavior and high handedness of some officers.*

The question demanded literal answer and the respondent answered it literally. This means that using *personal reading strength* as metacognitive strategy at phase III enhanced students' literal comprehension already existing in students' processing capacity at phase I.

The low range scorers of metacognitive group at phase III tried to process the passage interpretively. *Use of background knowledge* as metacognitive strategy emerged as the strategy that worked for them. For example, a script of low range scorer, below, showed how the answer to a question demanding interpretation was supplied at phase III.

(6) **Question:** *What could happen if one gives in?*

Answer: *If a man gives in there is problem for him. The man can't make it.*

The answer was fairly interpretive which was based on *background knowledge* use. The respondent must have used his general knowledge to construct a schema or adapting personal experience relating to losing hope in life and concluded that one *can't*

make it. The reader therefore adapted background knowledge to the context of the text. This strategic knowledge use helped the respondent to both process the text and construct a schema to provide an answer to the question. Interpretive processing through the use of *background knowledge* metacognitive strategy at phase III among the low range scorers showed an encouraging reading comprehension processing attempt.

At phase I low range scorers comparatively performed better at inferential comprehension which indicated attempted use of background knowledge to make some inferences about the passage. Answer to a question below clarifies how a low range performer of metacognitive group attempted an inferential response based on background knowledge.

(7) **Question:** *Do you think the writer was happy with condition he found in two area command?*

Answer: *No the writer was not happy.*

The respondent here reflected from his personal knowledge that the writer was not happy with condition he found at 2 Area Command. The respondent inferred from the real world knowledge. The inference was that one would not be happy under adverse situation as commander of a military formation.

Comparatively, excerpts of students' responses quoted above at phases II and III showed that high range scorer of metacognitive group used background knowledge strategy at phase II. That was the reason for their scoring more marks at interpretive sub-skill of reading comprehension at phase II. However, at phase III, *evaluation strategy* had more scope over *background knowledge* and other metacognitive strategies taught them. That was why the high range scorer scored more marks at critical and reorganizational level of reading comprehension.

Just as the quoted students' scripts showed above, middle range scorers at phases II and III had different impact of metacognitive strategies. At phase II it was *background knowledge* strategy that worked for the subjects which led to more score on interpretive sub-skill of comprehension processing. At phase III, it was using personal reading strategy that worked for the students which resulted in performing more on literal comprehension sub-skill.

Comparison of low range scorers' strategies use and impact at phases II and III, as the excerpts of students' scripts analysis above showed, showed variations. Phase II revealed that using *background knowledge* strategy had more impact on students reading comprehension processing. This led the subjects to more score on interpretive sub-skill of reading comprehension processing. The same thing happened at phase III. Using *background knowledge* emerged as the metacognitive strategy that worked for the low range performers of metacognitive strategies treatment group at phase III. That made their score better at interpretive sub-skill of reading processing performance also.

4.4 Comparison of Conventional Group's Reading Comprehension Processing Performance Score Range by Phases

Table 4.13 present comparison of the overall scores of conventional group's phases I and II.

Table 4.13: Overall Scores of Conventional Group's Phase I and II Compared

Phase I				Phase II		
Level	No	Avrg.Scor	%	No	Avrg.Scor	%
Zero	48	0.0	32.0	39	0.0	26.0
Low	102	7.6	68.0	111	8.0	74.0
Middle	-	-	-	-	-	-
High	-	-	-	-	-	-
150				150	8.0	100

Score result, in Table 4.13, of conventional group of reading comprehension processing showed some difference in the number of students who scored zero at phase I and II (48 and 39 respectively). Within the low range scores, 102 students emerged at phase I while the number increased to 111 at phase II. This clearly indicates retrogressive performance among the conventional group in reading comprehension processing capacity. Both in phases I and II, no students scored up to 34% to belong to middle and high range of score. The result indicates that conventional students' reading comprehension processing strategies had negative impact on their reading comprehension performance. The reason being that no categorically explicit reading comprehension processing strategies were taught the students which followed clear instructional procedure.

Qualitative analysis of students' scripts further proved the statistical results of the conventional group's performance profile at phase I and II of the present study. Consider what obtained as a student of the group responded to literal question in phase I and II (low range).

At phase one, a subject from the low range scored only 7% from a question demanding interpretive processing.

(8) **Question:** *What did the writer perceive as his first duty and how did he set about accomplishing it?*

Answer: *My first task was that of restoring mutual confidence and trust amongst soldiers and between soldiers and civilians.*

The answer to the question above was a mere copy from the passage that only captured one part of the question. This proved poor processing ability since processing confidence was lacking in the student. Lack of specific strategy use made the subject unable to answer the second part of the question.

Possessing and applying *deep understanding* strategy or metacognitive strategy such as use of *background knowledge* would have helped the subject processed the question and answer correctly. The same inability made the respondent to reanalyze the demand of the question and answered it that way (copying from seemingly relevant part of the passage).

Processing the passage and answering question inaccurately indicated how conventional comprehension processing failed to make positive impact on students' reading comprehension performance. Mere copying of relevant parts of passage to answer a question indicates lack of comprehension strategy training and usage.

At phase II, another question demanding interpretive processing was asked, thus:

(9) **Question:** *Why is it not easy for adults to detect the presence of the disease?*

Answer: *The illness diagnose among the elderly while treated.*

The answer above was copied, with omission, from the text in order to make it appear as personal effort to interpret the passage through paraphrasing. This exposed interpretive processing dilemma by the subject at phase II. First, the subject did not want to directly copy the answer from the passage. Second, he could not use *deep understanding* strategy or any metacognitive strategy to come up with appropriate sentence, clause or phrase to answer the question. The student was not equally equipped with metacognitive strategies that could help him process the passage and answer the question appropriately. This made him resort to uncertain answering of the question.

Table 4.14 presents comparison of the overall scores of conventional group's phase II and III.

Table 4.14: Overall Scores of Conventional Group's Phases II and III Compared

Phase II				Phase III		
Level	No	Avrg.Scor	%	No	Avrg.Scor	%
Zero	39	0.0	26.0	50	0.0	33.3
Low	111	8.0	74.0	96	9.5	64.0
Middle	-	-	-	4	36.5	2.7
High	-	-	-	-	-	-
	150	8.0	100	150	46.0	100

Table 4.14 shows that the number of conventional group's students who scored zero increased at phase III. This showed that conventional reading comprehension processing did not have positive impact on students' reading comprehension processing. The low range scorers were more at Phase II than at Phase III. By this, an improvement

was noticed as some students scored middle range marks which did not obtain at Phase II. In both phases II and III no student fell within the high score range. This further indicates that conventional reading comprehension strategy did not impact positively on students' reading comprehension. This means that conventional reading comprehension had no impact on students' reading comprehension performance. The reason being that students were not exposed to metarepresentational or metacognitive strategies of reading comprehension processing. The only strategy taught them was to read the passage and then answer questions which followed. How to read and process the meaning of text was never taught.

Table 4.15 presents comparison of the overall scores of conventional group's phases I and II.

Table 4.15: Overall Scores of Conventional Group's Phases I and III Compared

Phase I				Phase III		
Level	No	Avrg.Scor	%	No	Avrg.Scor	%
Zero	48	0.0	32.0	50	0.0	33.3
Low	102	7.6	68.0	96	9.5	64.0
Middle	-	-	-	4	36.5	2.7
High	-	-	-	-	-	-
	150	7.6	100	150	46.0	100

From Table 4.15, much difference was not observed between phases I and III in the number of zero scores obtained by the conventional group. The number of low range scorers decreased at phase III. That was why more students fell within the middle

range scorers at phase III. In both phases I and III, no student fell within the range of high scorers. The results therefore showed that conventional students' group did not perform well in reading comprehension which was as a result of their disorientation in both metacognitive and metarepresentational strategies of reading comprehension processing.

Excerpts from a student of conventional group revealed what happened in phases I and III of reading comprehension processing performance.

In phase I, the subject from the low range answered a question demanding interpretive processing.

- (10) **Question:** *What did the write perceive as his first duty and how did he set about accomplishing it?*
Answer: *My first task was that of restoring mutual confidence and trust amongst soldiers and between soldiers and civilians.*

Above is a mere copying from the text due to lack of exposure to different strategies to process the text appropriately.

At phase III, the same subject responded to the kind of questioning demanding an interpretive answer.

- (11) **Question:** *What happens when someone gives in?*
Answer: *When someone gives in he will succeed.*

The answer was wrong. The respondent processed the passage wrongly. It was inappropriate processing altogether. It was lack of comprehension processing strategies training that caused this wrong processing of text and wrong processing and production of answers.

4.5 Comparison of Metarepresentational Group's Reading Comprehension Processing Performance Score Range by Phases

Table 4.16 presents comparison of the overall scores of metarepresentational group at phase I and phase II.

Table 4.16: Overall Scores of Metarepresentational Group's Phases I and II

		Phase I			Phase II		
Level	No	Avrg.Scor	%	No	Avrg.Scor	%	
Zero	62	0.0	41.3	26	0.0	17.3	
Low	82	13.5	54.7	107	11.8	71.3	
Middle	6	43.8	4.0	17	47.3	11.4	
High	-	-	-	-	-	-	
	150	57.3	100	150	59.1	100	

From the results in Table 4.16, it is shown that metarepresentational group's reading comprehension performance was poor before treatment, that is at phase I. The number of students who scored zero and low marks was high. Few students scored middle range score and none scored high range marks. At phase II, improvement was observed as the number of zero scorers decreased and the middle scorers increased. This means that metarepresentational strategies treatment, surface meaning, deep meaning and complex meaning strategies at (Phase II) influenced students' higher performance than at Phase I where there was no such treatment.

From the table analysis above, it is evident that the three metarepresentational strategies treatment given to the students of metarepresentational had positive impact on

students' reading comprehension performance. The impact was the direct result of metarepresentational processing achieved through the use of complex understanding strategy of reading comprehension processing observed at phase II of high range scorers.

Excerpts from students' scripts buttressed how *complex understanding* strategy used by metarepresentational group boosted their reading comprehension performance at phase II of high range achievers.

At phase I, a question was asked, using a passage in Intensive English II Text, titled Life in the Army:

(12) **Question:** *What kind of a commander do you think the writer was and why?*

A high level performer answered:

Answer: *The writer was honest, just and trusted commander. In order to restore mutual confidence discipline and trust.*

The question above demanded critical processing and response, but the subject wrongly applied *deep understanding strategy* that resulted in wrong inferencing. The answer, therefore, was wrong. This happened before the subjects were treated with metarepresentational strategies of reading comprehension processing.

At phase II, another question eliciting critical processing was asked pertaining to a passage title *sugar* in Intensive English II course book:

From what you have read, do you think the disease is curable or not? Why?

Answer provided to the question above by the same student from high range scorers of metarepresentational group reads:

Yes the disease can be cure because doctors treat old people that suffer the sickness with giving some tablets and ask them to eat small carbohydrate food. Young boys doctors give them regular injection of insulin, because tablets don't work for them like old ones.

Due to regularized treatment of subjects with the three metarepresentational strategies (surface meaning understanding, deep meaning understanding and complex meaning understanding), the comprehension processing of the subject became complex at this phase II. The subject used the *complex understanding* strategy to metarepresent what the writer tended to mean though not clearly spelt out. The 'yes' answer indicated having used complex understanding strategy to process the question and the answer, and clearly expressed his stand. The position was further defended by the use of the connective "because" introducing a supporting proposition *doctors treat old people that suffer the sickness with giving them some tablets*.

Another supporting proposition stated that *young boys doctors give them regular injection of insulin*. The student backed up the point with another *because* which introduced a reason *tablets don't work for them*. This comprehension processing resulted from the use of *complex understanding* strategy which led to the production of this type of critical answer. The answer was therefore right. Utilization of appropriate metarepresentational strategies such as *complex understanding strategy* in processing and answering a question demanding critical answer was responsible for students' impressive reading performance at phase II.

Excerpts from students' scripts illustrate how deep understanding strategy elevated the performance of metarepresentational students to middle range performance from low range performance. This was at phase II when the three metarepresentational

strategies were exposed to the subjects. Students in this range scored high at inferential level of reading comprehension.

A critical question was asked:

(13) **Question:** *Why do you like or dislike this passage (on sugar)?*

Answer: *The writer has knowledge, and well experience in medicine.*

The answer to this question was not processed along the line of *complex understanding* strategy. Rather, the respondent used *deep understanding* strategy to work out a critical answer. This means that it was *deep understanding* strategy that work for the respondent (middle range scorer) at phase II (17.88%) and not *complex or surface understanding* strategy.

At phase I, before treatment phase, the same student processed and performed at literal level of comprehension. This means that before metarepresentational treatment, middle range scorers (34 – 66%) of metarepresentational group's comprehension performance weighted toward literal processing (32.8%) which diminished at phase II (17.80%). For example, the same respondent answered a literal question well at phase I.

(14) **Question:** *Name two barriers to friendship that existed among the soldiers.*

Answer: *The two barriers that existed among the soldiers are authoritarianism and high handedness of officers.*

The question above demanded literal processing and the respondent processed and produced the answer appropriately.

The low achievers of metarepresentational group performed better at inferential level in phase I, but did more on interpretive level at phase II. This shows that after

treatment, it was *deep understanding* strategy that worked for low achievers of metarepresentational group. Excerpt from a member of low range scorers explicates this result.

(15) **Question:** *Do you think the writer was happy with the condition he found in area 2 command? Why?*

Answer: *The writer not happy because no many soldiers and guns.*

The above question was asked at phase I. the respondent answered the question by processing the text inferentially. The answer was not directly stated in the text, but the respondent inferred from the information obtained in that text indicating that there were insufficient military equipment and logistics.

At phase II when the subjects were treated with metarepresentational strategies, the same subject processed the same kind of question requiring inferential answer interpretively this time around. See excerpts below:

(16) **Question:** *Why is it difficult for doctors to diagnose the disease in children?*

Answer: *The disease is difficult, it confuse doctors to find.*

The answer above shows how *deep understanding* strategy helped the low range student in processing the text and the answering the question interpretively. This shows that the strategy worked for the low range students at phase II, but not at phase I where treatment was not given.

Table 4.17: Overall Scores of Metarepresentational Group: Phases II and III Compared

Table 4.17 presents comparison of the overall scores of metarepresentational group at phases II and III.

		Phase II		Phase III		
Level	No	Avrg.Scor	%	No	Avrg.Scor	%
Zero	26	0.0	17.3	-	-	-
Low	107	11.8	71.3	53	23.7	35.3
Middle	17	47.3	11.4	93	46.3	62.0
High	-	-	-	4	71.8	2.7
		150	59.1	100	141.8	100

What is indicative in Table 4.17 is wide difference in processing performance between metarepresentational group's phases II and III at zero level of score. At phase I many students scored zero before treatment, but after treatment of students with the three metarepresentational strategies at phase III, no student scored zero. More students scored low marks at Phase II than Phase III. Middle range scores increased in number at Phase III. There was no high scorer at Phase II but some (4) emerged at phase III. The results from Table 4.17 reveal that metarepresentational strategies improved students' reading comprehension performance.

The three metarepresentational strategies treatment given to metarepresentational reading comprehension group impacted greatly on students' reading performance. The impact was due to the students' metarepresentational

strategies of processing text material achieved through the use of *complex understanding* strategy by high range performers at phase III. Middle range performers were helped by *deep understanding* strategy as well as low performers. Students performed poorly at phase I because they were not treated with the strategies at that phase.

Excerpts from student's scripts illustrated how the three strategies worked for student in metarepresentational group as phases I and III were compared.

At phase I, a question elicited reorganizational processing response

(17) **Question:** *What do you think contributed to the battalion's lack of confidence?*

Answer: *Group affinity and language contribute to lack of confidence in the battalion.*

The respondent was able to process the text by reorganizing the facts to produce the answer. The respondent processed two ideas from different part of the passage to provide the answer. This means that the student personally used deep understanding strategy and performed better at reorganizational level of reading comprehension. This was done by deeply figuring out two differently indicated ideas and marrying them together to answer the question.

At phase III, the same student performed highly at critical level of reading comprehension, and not reorganizational level. The change in performance was due to metarepresentational treatment given in phase III. The strategy that worked for this and other subjects at the high range performance was *complex understanding* strategy (3.29 average score, 46.18%). The strategy aided their critical processing capacity which

made them scored higher at critical level. Consider the response to a critical question below.

(18) **Question:** *Why do you like or dislike this passage?*

Answer: *The reason why I like this passage is that if we are to follow the strategies given to us by the writer there would be no man born of a woman that would not succeed in life.*

Critical response such as the above answer shows how *complex understanding* metarepresentational strategy worked which led to such generalization: “no man born of a woman”. The strategy provoked the use of the conditional “if” and the negative universal quantifier “no” man, meaning “no one”.

Another excerpt from a middle range performer of metarepresentational group proves how metarepresentational processing strategies worked for students of different score range at different phases of the treatment. At phase one, a literal question that elicited *surface understanding* strategy of comprehension processing was asked:

(19) **Question:** *Name two barriers to friendship that existed among the soldiers.*

Answer: *Apart from the group affinity and loyalty language was the second cause of friction*

The answer provided by the respondent above was not the expected one. The subject should have used *surface understanding* strategy of metarepresentation to process both the question and the answer literally. The use of the phrase “cause of friction” indicated wrong processing of that part of the passage the subject read as he connected it to the answer. The processing should have concerned “naming of two barriers” and not “cause of friction”. “Naming” indicated that certain barriers were mentioned in the passage which the subject was only expected to state through literal

processing. The processing, therefore, required the use of *surface understanding* strategy which did not work for the subject at this phase I.

With the treatment of subjects using the three metarepresentational strategies of reading comprehension at phase III, the same subject improved. Another literal question was asked at phase three:

(20) **Question:** *State two factors that facilitate success.*

Answer: *Man's will to succeed.*

Though the subject provided one factor and not two as demanded by the question, it showed how the processing changed from wrongly guessed inferencing at phase I, to rightly literal processing at phase III. This means that *surface understanding* strategy worked for the students at phase III.

Low range scorers' performance at phase I in metarepresentation group did not do well because of wrong use of processing strategies as excerpts from their scripts revealed below. Consider the response of a subject in low range performance to an inferential question:

(21) **Question:** *Do you think the writer was happy with the condition he found in
2
Area Command? Why?*

Answer: *There is no peace between the civilian and soldiers.*

The answer above was wrong due to wrong processing of the “why” part of the question and the answer. The question needed a use of *deep understanding* metarepresentation strategy to process the answer inferentially. But the subject literally answered the question and got it wrong. The answer was not explicitly provided in the text. It was the reader, based on his processing capacity of the text, that was

expected to infer from what the text said to arrive at the answer. This required *deep understanding* strategy which the reader lacked and led him processed the text and the answer literally.

Table 4.18: Overall Scores of Metarepresentational Group: Phases I and III Compared

Table 4.18 presents comparison of the overall scores of metarepresentational group at phases I and III.

Phase I				Phase III		
Level	No	Avrg.Score	%	No	Avrg.Score	%
Zero	62	0.0	41.3	-	-	-
Low	82	13.5	54.7	53	23.7	35.3
Middle	6	43.8	4.0	93	46.3	62.0
High	-	-	-	4	71.8	2.7
	150	57.3	100	150	141.8	100

Table 4.18 showed that while few zero scorers of metarepresentational group still existed in phase II, they disappeared in phase III. In the same trend, while there were no students who scored any high marks (67 – 100) in phase II, four (4) students scored high marks at phase III.

4.6 Comparison of Conventional Group’s Reading Comprehension Processing Performance Score Range by Phases

Table 4.18 present comparison of the overall scores of conventional group’s phases I and II.

Table 4.19: Overall Scores of Conventional Group’s Phase I and II Compared

		Phase I		Phase II		
Level	No	Avrg.Score	%	No	Avrg.Score	%
Zero	48	0.0	32.0	39	0.0	26.0
Low	102	7.6	68.0	111	8.0	74.0
Middle	-	-	-	-	-	-
High	-	-	-	-	-	-
		150	7.6	100	150	8.0
					100	

Score results in Table 4.19, of conventional group showed some difference in the number of students who scored zero at phase I and II (48 and 39 respectively). Within the low range scores, more students emerged at phase I than phase II. This clearly indicates retrogressive performance among the conventional group in reading comprehension processing capacity. Both in phases I and II, no students scored up to 34% to belong to middle and high range of score. The result indicates that conventional students’ reading comprehension processing strategies had negative impact on their reading comprehension performance. The reason being that no categorically explicit reading comprehension processing strategies were taught the students which followed clear instructional procedure.

Qualitative analysis of students’ scripts further proved the statistical results of the conventional group’s performance profile at phase I and II of the present study.

Consider what obtained as a student of the group's response to literal question in phases I and II (low range).

At phase one, a subject from the low range scored only 7% from a question demanding interpretive processing.

(22) **Question:** *What did the writer perceive as his first duty and how did set about accomplishing it?*

Answer: *My first task was that of restoring mutual confidence and trust amongst soldiers and between soldiers and civilians.*

The answer to the question above was a mere copy from the passage that only captured one part of the question. This proved poor processing ability since processing confidence was lacking in the student. Lack of specific strategy use made the subject unable to answer the second part of the question.

Possessing and applying *deep understanding* strategy or metacognitive strategy such as use of *background knowledge* would have helped the subject processed the question and answer correctly. The same inability made the respondent to reanalyze the demand of the question and answered it that way (copying from seemingly relevant part of the passage).

Processing the passage and answering question inaccurately indicated how conventional comprehension processing failed to make positive impact on students' reading comprehension performance. Mere copying of relevant parts of passage to answer a question indicates lack of comprehension strategy training and usage.

At phase II, another question demanding interpretive processing was asked, thus:

(23) **Question:** *Why is it not easy for adults to detect the presence of the disease?*

Answer: *The illness diagnose among the elderly while treated.*

The answer above was copied, with omission, from the text in order to make it appear as personal effort to interpret the passage through paraphrasing. This exposed interpretive processing dilemma by the subject at phase II. First, the subject did not want to directly copy the answer from the passage. Second, he could not use *deep understanding* strategy or any metacognitive strategy to come up with appropriate sentence, clause or phrase to answer the question. The student was not equally equipped with metacognitive strategies that could help him process the passage and answer the question appropriately. This made him resort to uncertain answering of the question.

Table 4.20 presents comparison of the overall scores of conventional group's phase II and III.

Table 4.20: Overall Scores of Conventional Group's Phases II and III Compared

Phase II				Phase III		
Level	No	Avrg.Score	%	No	Avrg.Score	%
Zero	39	0.0	26.0	50	0.0	33.3
Low	111	8.0	74.0	96	9.5	64.0
Middle	-	-	-	4	36.5	2.7
High	-	-	-	-	-	-
	150	8.0	100	150	46.0	100

Table 4.20 shows that the number of conventional group's students who scored zero at phase II increased at phase III. This showed that conventional reading comprehension processing did not have positive impact on students' reading comprehension processing. The low range scorers decreased in number at Phase III. By this, an improvement was noticed as four (4) students scored 36.5 average marks at phase three (III) who were the only middle range scorers. Therefore, there was no middle range scorers at phase II. In both phases II and III no student fell within the high score range. This further indicates that conventional reading comprehension strategy did not impact positively on students' reading comprehension. This means that conventional reading comprehension had no impact on students' reading comprehension performance. The reason being that students were not exposed to metarepresentational or metacognitive strategies of reading comprehension processing. The only strategy taught them was to read the passage and then answer questions which followed. How to read and process the meaning of text was never taught.

Table 4.21 presents comparison of the overall scores of conventional group's phases I and II.

Table 4.21: Overall Scores of Conventional Group’s Phases I and III Compared

Phase I				Phase III		
Level	No	Avrg.Score	%	No	Avrg.Score	%
Zero	48	0.0	32.0	50	0.0	33.3
Low	102	7.6	68.0	96	9.5	64.0
Middle	-	-	-	4	36.5	2.7
High	-	-	-	-	-	-
150				150	46.0	100

From Table 4.21, much difference was not observed between phase I and III in the number of zero scores obtained by the conventional group (48 and 50 respectively). Low range scorers decreased from 102 in phase I to 96 in phase III. That was why 4 students fell within the middle range scorers at phase III. In both phases I and III, no student fell within the range of high scorers (67 – 100%). The results therefore showed that conventional students’ group did not perform well in reading comprehension which was as a result of their disorientation in both metacognitive and metarepresentational strategies of reading comprehension processing.

Excerpts from a student of conventional group revealed what happened in phases I and III of reading comprehension processing performance.

In phase I, the subject from the low range answered a question demanding interpretive processing.

(24) **Question:** *What did the write perceive as his first duty and how did he set about accomplishing it?*

Answer: My first task was that of restoring mutual confidence and trust amongst soldiers and between soldiers and civilians.

Above is a mere copying from the text due to lack of exposure to different strategies to process the text appropriately.

At phase III, the same subject responded to the kind of questioning demanding an interpretive answer.

(25) *Question: What happens when someone gives in?*

Answer: When someone gives in he will succeed.

The answer was wrong. The respondent processed the passage wrongly. It was inappropriate processing altogether. It was lack of comprehension processing strategies training that caused this wrong processing of text and wrong processing and production of answers.

4.7 Comparison of Metacognitive, Metarepresentational and Conventional Group's Reading Comprehension Processing Performance Scores

Table 4.22 presents comparison of the overall scores of metacognitive, metapresentational and conventional groups' reading comprehension performance scores in phases.

Table 4.22: Overall Scores of Metacognitive, Metarepresentational and Conventional Groups in Phases

No	Level	Range	Phase I			Phase II			Phase III		
			No	Avg. Sc	%	No	Avg. Sc	%	No	Avg. Sc	%
1.	Zero Level:										
	Metarepresentational	0	52	0.0	41.3	26	0.0	17.3	00	0.0	0.0
	Metacognitive		57	0.0	38.0	29	0.0	19.3	06	0.0	4.0
	Conventional		48	0.0	32.0	39	0.0	26.0	50	0.0	33.
2.	Low Level:										
	Metarepresentational	1 – 33	82	13.5	54.7	107	11.8	71.3	53	23.7	35.3
	Metacognitive		74	12.9	49.3	104	12.3	69.3	97	17.6	64.7
	Conventional;		102	7.6	68.0	111	8.0	74.0	96	9.5	64.0
3.	Middle Level:										
	Metarepresentational	34-66	06	43.8	4.0	17.	47.3	11.4	93	46.3	62.0
	Metacognitive		18	45.2	12.0	15	43.7	10.0	46	43.4	30.6
	Conventional		00	0.0	0.0	00	0.0	0.0	04	36.5	2.7
4.	High Level:										
	Metarepresentational	67-100	00	0.0	0.0	00	0.0	0.0	04	71.8	2.7
	Metacognitive		01	67.0	0.7	2	69.5	1.4	01	70.0	0.7
	Conventional		00	0.0	0.0	00	0.0	0.0	00	0.0	0.0
Total			450	190	300	450	191.2	300	450	318.8	300

Comparing conventional and metacognitive processing strategies groups' score, Table 4.22 showed clear difference. Conventional group showed successive increase in the number of zero scorers across the phases (phase I, 48, phase II, 39, phase III, 50).

This contrasts sharply with that metacognitive and metarepresentational processing strategies groups' zero level scorers (phase I, 57, phase II, 29, phase III, 06 versus phase I, 52, phase II, 26 and phase 00.00 respectively). This means that both metacognitive and metarepresentational processing strategies had positive impact on students' reading comprehension performance. Contrarily, conventional reading did not have impact on students' reading comprehension performance.

At the high range of scores, metacognitive group had two students, at phase II, who scored up to 69.5% and one student with 70% score at phase III. Conventional group has no high scorer (67 – 100) across the phases, while metarepresentational group had four students who scored 71.8% at phase III. This reveals that while conventional reading procedure did not have impact on students' reading performance, metacognitive and metarepresentational processing strategies impacted positively on students' reading performance.

Therefore, the results showed that while metarepresentational processing strategies impacted positively on students' reading comprehension performance, metacognitive processing strategies followed on. Conventional reading comprehension strategy comparatively did not impact on students' reading comprehension as indicated in Table 4.13.

Based on the quantitative analysis of students script undertaken so far, quantitative analysis below was done to support the point discussed.

Null hypothesis One states:

There is no significant difference between reading comprehension performance of students taught using metacognitive and conventional processing strategies.

One way ANOVA (Analysis of Variance) was used to compare the control group's performance with metacognitive group's, in phases. Summary of the computation is shown on table 4.23 below

Table 4.23 presents the computation of the overall scores of metacognitive treatment and control groups as compared in phases (phases I, II and III), corresponding to the beginning, middle and end of the treatment of subject.

Table 4.23

A Summary of the Computation of Metacognitive and Control Groups'

Performance.

	Sum of Squares	Df	Mean Square	F	P
Between Groups	27749.952	3	9249.984	49.527	0.000
Within Groups	111313.0	596	186.767		
Total	139063.0	599			

From Table 4.23, the F-calculated is 49.527 with P-value = 0.000. Therefore, the groups significantly differed; hence, post-Hoc test was used to identify the pair of group that showed the differences. In this situation, since the experimental groups were compared with a single control group Dunnett test was more appropriate (Roscoe, 1967).

Table 4.24 highlights the comparative performance of metacognitive group and control group across the three phases of the treatment, beginning, middle and end (phase I, II and).

Table 4.24**A Summary of the Computation of the Scores of Metacognitive and Control****Groups and across Three Phases.**

(I) Phases	(J) Phases	Mean Difference (I – J)	Std. Error	Sig.	95% Confidence Level	
					Lower Bound	Upper Bound
Metavognitive	Conventional					
Phase I	III	-18.59333	1.57804	.000	-22.3096	-14.8771
Phase II	III	-12.99333	1.57804	.000	-16.7096	-9.2771
Phase III	III	-12.54000	1.57804	.000	-16.2563	-8.8237

Table 4.24 reveals that there was significant difference between the performance scores of control and metacognitive groups in favour of metacognitive group. It also showed that metacognitive group performed higher at phase III than at phases I and II (-18.59333* and -12.99333*). This means that the hypothesis that stated that there was no significant difference between the reading comprehension performance of students taught using metacognitive and conventional processing strategies was not confirmed.

Below is a t-test analysis of metacognitive group's score between phases I and II, phases II and III and phases I and II. The analysis was undertaken to confirm the impact of metacognitive processing strategies on reading performance. The summary of the computation is presented in Table 4.25.

Table 4.25: T-test Analysis of Metacognitive Group's Phases I and II Scores

Variables	N	Mean	SD	Df	T	P
Metacognitive Phase I	150	40.20	12.04	298	2.74	0.01
Metacognitive Phase II	150	45.10	14.61			

Results from Table 4.25 show that P-value of 0.01 is less the alpha value 0.05 level of significance at df = 298. The observed t-value was therefore significant. This

suggested that metacognitive comprehension processing strategies had impact on students. Reading performance at phase II was higher than their reading comprehension processing performance at phase I where the students were not treated with metacognitive processing strategies. This means, metacognitive processing strategies had significant impact on students' reading comprehension performance.

Table 4.26 presents a t-test analysis of metacognitive group's phases II and III scores.

Table 4.26: T-test Analysis of Metacognitive Group's Phases II and III Scores

Variables	N	Mean	SD	T	Df	P
Metacognitive Phase II	150	35.26	11.01	3.24	298	0.02
Metacognitive Phase III	150	39.81	12.62			

Table 4.26 reveals that the P-value of 0.01 is less the alpha value 0.05 level of significance at $df = 298$. The observed t-value was therefore significant. This implies that metacognitive comprehension processing strategies had impact on students' reading comprehension performance.

Table 4.27 presents a t-test analysis of metacognitive group's phases I and III scores.

Table 4.27: T-test Analysis of Metacognitive Group's Phases I and III Score

Variables	N	Mean	SD	T	Df	P
Metacognitive Phase I	150	34.02	8.04	3.60	298	0.00
Metacognitive Phase III	150	38.71	10.46			

It was found, in Table 4.27 that the P-value of 0.00 is less the alpha value 0.05 level of significance at $df = 298$. This means that metacognitive processing strategies had impact on students' reading comprehension performance.

A t-test analysis of conventional group's scores between phases (I and II; II and III and I and III) is presented in Table 4.28. It was undertaken to further confirm the impact of conventional on reading comprehension performance.

Table 4.28, presents a t-test analysis of conventional group's scores by phases.

Table 4.28: T-test Analysis of Conventional Group's Phases I and II Scores

Variables	N	Mean	SD	T	Df	P
Conventional Phase I	150	28.32	6.07	2.45	298	0.03
Conventional Phase II	150	31.06	6.38			

Table 4.28 revealed that the P-value of 0.03 is less the alpha value 0.05 level of significance at $df = 298$. This suggested that conventional strategy of reading comprehension processing did not have significant impact on students' reading comprehension performance at the two phases.

Table 4.29 presents a t-test analysis of conventional group's scores at phases II and III.

Table 4.29: t-test Analysis of Conventional Group's Scores at Phases II and III

Variables	N	Mean	SD	T	Df	P
Conventional Phase II	150	29.03	6.38	2.18	298	0.01
Conventional Phase III	150	29.24	8.32			

Slight difference in the group's mean scores at phases II (29.03) and III (29.24) was revealed in Table 4.29. This suggested that conventional reading comprehension

strategy did not have positive impact, but negative impact on students reading performance. The result indicated retrogression in comprehension performance at phase III against phase II.

Table 4.30 presents a t-test analysis of conventional group's score at phases I and III.

Table 4.30: T-test Analysis of Conventional Group's Scores at Phases I and III

Variables	N	Mean	SD	T	Df	P
Conventional Phase I	150	25.72	6.07	3.69	298	0.02
Conventional Phase III	150	26.48	8.32			

What obtains in Table 4.30 was a revelation of slight difference between the mean score of conventional group's phase I and phase III (25.72 and 26.48 respectively). The differences between the two phases suggested that the impact of conventional reading comprehension processing strategies was not much.

Null Hypothesis Two states:

There is no significant difference between reading comprehension performance of students taught using metarepresentational and conventional processing strategies.

4.8 Metarepresentational Processing Ability and Students' Reading Comprehension Performance by Phases

Table 4.31 presents the computation of the overall scores of metarepresentational group and that of the control group, as compared by phases.

Table 4.31: Summary of the Computation of Metarepresentational and Control Groups' Reading Performance

	Sum of Squares	Df	Mean Square	F	P
Between Groups	99679.260	3	33226.420	213.466	.000
Within Groups	92768.600	596	155.652		
Total	192447.9	599	-	-	-

It is found in Table 4.31, that F-calculated was 213.466 with P-valued 0.000. This means that there was significant difference between the two groups (metarepresentational and control). Thus, Post-Hoc test was used to identify the pair of group that showed the differences. In that regard, Dunnett test was used as an appropriate statistical tool since the experimental groups were compared with a single control group (Roscoe, 1967).

Table 4.32 presents comparative performance of metarepresentational and control groups across phases.

Table 4.32: Summary of the Computation of Scores obtained by Metarepresentational and Control Group in Phases

(I) Phases	(J) Phases	Mean Difference (I – J)	Std – Error	Sig.	95% Confidence Level	
					Lower Bound	Upper Bound
Metarepresentational	Conventional					
Phase I	III	- 25.20000*	1.44061	.000	- 35.8126	- 29.0274
Phase II	III	- 29.86000*	1.44061	.000	- 332526	- 264674
Phase III	III	- 23.42000*	1.44061	.000	- 28.5926	- 21.8074

* The mean difference is significant at the .05

Table 4.32 reveals that significant difference exists between the performance of the control and metarepresentational groups in favour of metarepresentational group. Phase III of metarepresentational group was higher than phases I and II (-25.20000 and-29.86000) respectively. It means that the hypothesis that stated that there was no significant difference between the reading comprehension performance of students taught using metarepresentational and conventional processing strategies was not confirmed.

Following is the summary of the computation of metarepresentational group’s score as compared across phases. T-test analysis was used to further confirm the impact of metarepresentational processing strategies on students’ reading performance.

Table 4.33 presents a T-test analysis of metarepresentational group’s phase I and II.

Table 4.33: T-test Analysis of Metrepresentational Group’s Phases I and II Scores

Variables	N	Mean	SD	T	Df	P
Metarepresentational Phase I	150	43.33	11.38	2.87	298	0.01
Metarepresentational Phase II	150	46.28	15.08			

Table 4.33 reveals that the P-value of 0.01 is less the alpha value 0.05 level of significance at df = 298. This suggested that metarepresentational processing strategies had impact on students’ reading comprehension performance at phase II where the students were treated with the three metarepresentational strategies.

Table 4.34 presents a t-test analysis of metarepresentational group’s phases II and III scores.

Table 4.34: t-test Analysis of Metarepresentational Group’s Phases II and III Scores

Variables	N	Mean	SD	T	Df	P
Metarepresentational Phase II	150	46.28	15.08	4.62	298	0.01
Metarepresentational Phase III	150	54.21	14.00			

Results from Table 4.34 reveal that the P-value of 0.01 is less the alpha value 0.05 level of significance at $df = 298$. This implied that the observed t-value was significant. Further, the mean of metarepresentational group’s phase III is higher than its phase II (39.00 versus 13.80 respectively). The results suggested that metarepresentational processing strategies had impact on students’ reading comprehension performance at both phases II and III. However, the impact was more evident at phase III (39.00).

Table 4.35 presents a t-test analysis of metarepresentational group’s phases I and III scores.

Table 4.35: T-test Analysis of Metarepresentational Group’s Phases I and II Scores

Variables	N	Mean	SD	T	Df	P
Metarepresentational Phase I	150	43.33	11.38	4.01	298	0.02
Metarepresentational Phase III	150	54.21	14.00			

Table 4.35 reveals that the P-value of 0.02 is less the alpha value 0.05 level of significance at $df = 298$. The observed t-value was therefore significant. This suggested that metarepresentational processing strategies of reading comprehension had impact on students’ reading comprehension performance at phase III.

Table 4.36: t-test Analysis of Conventional Group's Phases I and II Scores

Variables	N	Mean	SD	T	Df	P
Conventional Phase I	150	28.32	6.07	2.45	298	0.03
Conventional Phase II	150	31.06	6.38			

Table 4.36 revealed that the P-value of 0.03 is less the alpha value 0.05 level of significance at $df = 298$. This means that conventional strategy of reading comprehension processing did not have significant impact on students' reading comprehension performance at the two phases.

Table 4.36 presents a t-test analysis of conventional group's scores at phases II and III.

Table 4.37: t-test Analysis of Conventional Group's Scores at Phases II and III

Variables	N	Mean	SD	T	Df	P
Conventional Phase II	150	29.03	6.38	2.18	298	0.01
Conventional Phase III	150	29.24	8.32			

Slight difference in the group's mean scores at phases II (29.03) and III (29.24) was revealed in Table 4.37. This implies that conventional reading comprehension strategy did not have positive impact, but negative impact on students reading performance. The result indicated retrogression in comprehension performance at phase III against phase II.

Table 4.37 presents a t-test analysis of conventional group's score at phases I and III.

Table 4.38: t-test Analysis of Conventional Group’s Scores at Phases I and III

Variables	N	Mean	SD	T	Df	P
Conventional Phase I	150	25.72	6.07	3.69	298	0.02
Conventional Phase III	150	26.48	8.32			

What obtains in Table 4.38 was a revelation of slight difference between the mean score of conventional group’s phase I and phase III (25.72 and 26.48 respectively). The differences between the two phases suggested that the impact of conventional reading comprehension processing strategies was not much.

4.9 Metacognitive and Metarepresentational Students’ Reading Comprehension Processing Performance Compared

Null Hypothesis Three:

None of the Strategies has more Impact than the other on Students’ Reading Comprehension Performance

To compare the relative efficacy of the two treatments, a comparative t-test analysis of metacognitive and metarepresentational treatment groups’ scores by phases (phases II and III) is presented.

Table 4.39 presents a comparison of t-test analysis of phases II scores of metacognitive and metarepresentational groups.

Table 4.39: T-test Analysis of Metacognitive and Metarepresentational Groups' Phase II Scores Compared

Variables	N	Mean	SD	T	Df	P
Metacognitive Phase II	150	35.26	4.01	2.68	298	0.01
Metarepresentational Phase II	150	46.28	15.08			

Table 4.39 reveals that the P-value of 0.01 is less the alpha value 0.05 level of significance at $df = 298$. The observed the two groups phase II scores t-value was therefore significant. However, the mean of metarepresentational group's phase II scores (46.28) was higher than that of metacognitive group's (35.26). This means that metarepresentational processing strategies had more impact on students' reading comprehension performance.

Table 4.40 presents a comparison of t-test analysis of metacognitive phase III scores of metacognitive and metarepresentational treatment groups.

Table 4.40: T-test Analysis of Metacognitive and Metarepresentational groups' Phase III Scores Compared

Variables	N	Mean	SD	T	Df	P
Metacognitive Phase III	150	38.71	14.09	3.01	298	0.02
Metarepresentational Phase III	150	54.21	15.00			

In Table 4.40, the P-value of 0.03 is less the alpha value 0.05 level of significance at $df = 298$. The mean of phase III scores of metarepresentational treatment group (54.21) was higher than that of metacognitive treatment group's (38.71). This indicates that both metacognitive processing strategies and metarepresentational processing strategies had significant impact on students' reading

comprehension performance. However, metarepresentational processing strategies emerged as having more impact on students' reading comprehension performance as the result in Table 4.39 revealed.

4.10 Comprehension Levels and Metarepresentational Students' Group Performance

Null Hypothesis Four: No Strategy Impacts on any Level of Reading Comprehension

To find the comprehension level at which metarepresentational processing strategies impact the more, frequency Table was used.

Table 4.41 presents the frequency distribution of metarepresentational impact on comprehension levels.

Table 4.41

			Post Test				
			Very Low	Low	Moderate	High	Total
Levels	Literal	Count	58	66	23	1	24%
		% of Total	7.7%	8.8%	3.1%	1%	4.1%
	Inferential	Count	97	18	26	8	34%
		% of Total	12.9%	2.4%	3.5%	1.1%	4.6%
	Critical	Count	77	19	19	25	44%
		% of Total	10.3%	2.5%	2.5%	3.3%	5.8%
	Interpretive	Count	133	3	8	3	12%
		% of Total	17.7%	4%	1.1%	4%	5.1%
	Organization	Count	108	17	15	10	25%
		% of Total	14.4%	2.3%	2.0%	1.3%	3.3%
Total	Count		473	123	91	47	138%
	% of Total		63.1%	16.4%	12.1%	6.3%	18.4%

Table 4.41 reveals that 44 of the score level weighted towards critical level of comprehension. The result was obtained by combining the scores of both moderate and high level performers of the metarepresentational treatment group. *Complex*

understanding strategy emerged to be the strategy that made students achieved the critical level of reading comprehension performance.

Inferential level of comprehension performance followed the critical. Table 4.32 showed that 34 score level tilted to inferential comprehension level. The performance was due to *deep understanding* metarepresentational strategy employed by the students. The results mean that complex understanding and *deep meaning understanding* metarepresentational strategies impacted on students' critical and inferential levels of reading comprehension respectively. Therefore, the null hypothesis stating that no strategy had impact on any level of students' reading comprehension was not confirmed.

4.11 Overall Findings

The overall findings of the study are presented in this section. These reflected the research questions raised and hypotheses developed in sections 1.4 and 1.5 respectively. The findings obtained are:

- (1) There is significant difference between the reading performance of students taught using metacognitive and conventional comprehension processing strategies in favour of metacognitive processing strategies students.
 - a. Differences between metacognitive and conventional students' scores exist at phase levels. (Metacognitive at phase II average score: 125.5, phase III 131.00 and conventional at phase II average score: 8.0, phase III 46.0).
 - b. The number of students that scored low marks in metacognitive group decreased, while those who scored middle range increased. High range scores did not increase in number. Conventional groups' lower performers

increased in number. No student achieved middle performance score at phase II, but only (4) at phase III. Higher scores were not achieved either by conventional group compared to metacognitive group across phases.

- c. There is significant difference between the reading performance of students taught using metacognitive processing strategies and conventional students (-12.99333 and -12.54000 respectively).
 - d. At the end of the treatment (phase III), a low comprehension processing achiever from the metacognitive group was able to process the passage and answer a question interpretively.
- (2) There is significant difference between the reading performance of students taught using metarepresentational and conventional comprehension processing strategies in favour of metarepresentational processing strategies students.
- a. There is difference between the scores of metarepresentational processing strategies group and conventional in reading comprehension across phases.
 - b. Metarepresentational group had fewer number of low scores at the end of the treatment (phase III) than the conventional group (see Table 4.03). Middle scores of metarepresentational group increased, while only few managed to fall within the middle range score (34 to 66%) among the conventional group. High range scorers performed better than the conventional group. This confirms that significant difference exists between students taught using metarepresentational processing strategies and conventional reading comprehension, in favour of metarepresentational.

- c. Computation of scores of metarepresentational and conventional groups buttressed that significant difference existed between the reading performance of students taught using metarepresentational processing strategies and conventional ways of reading comprehension (see table 4.32).
 - d. Movement of metarepresentational group's low achievers (1 to 33%) to middle range score (34 to 66%) suggests clear difference between metarepresentational and conventional group. The conventional group did not have such significant movement. Deep understanding processing strategy instigated the change in metarepresentational group's reading comprehension performance which (the strategy) conventional group did not have.
- (3) Metarepresentational comprehension processing strategies had more impact on students' reading comprehension performance.
- a. Metarepresentational comprehension processing strategies improved students' reading comprehension processing performance predominantly at critical level at phase III. Comparatively, metacognitive group had same average score 3.29, however, the number of the higher achievers was fewer than that of metarepresentational group.
 - b. High, middle and lower score achievers of metarepresentational group performed higher at critical level than metacognitive and conventional groups. Middle level scorers performed higher at inferential level of comprehension than metacognitive and conventional groups. Lower level

scorers performed better at interpretive level than metacognitive and conventional groups (see Table 4.08).

- c. The metarepresentational group progressed better in reading comprehension processing than metacognitive group and conventional group. The mean score of metarepresentational group showed that students' reading comprehension processing in metarepresentational group was better than the metacognitive and conventional groups (see Table 4.08).
- (4) Metarepresentational comprehension processing strategies had more impact on critical level of reading comprehension.

Table 4.42: Summary of Overall Research Findings

Research Question	General Findings	Sub-Findings
<p>1. What is the difference between the reading performance of students taught using metacognitive and conventional comprehension processing strategies?</p>	<p>There is significance difference between the reading performance of students taught using metacognitive and conventional comprehension processing strategies in favour of metacognitive processing strategies.</p>	<p>(a) Differences exist at phases in scores, between metacognitive and conventional (phase II average score:125.5, phase III, 131.00 and phase II: 8.0, phase III: 46.0 respectively see table 4.01.</p> <p>(b) The number of students that scored low marks in metacognitive group decreased, while those who scored middle range increased. High range scores did not increase in number. Conventional groups' lower performers increased in number. No student achieved middle performance score at phase II, but only (4) at phase III. Higher scores were not achieved either by conventional group compared to metacognitive group across phases.</p> <p>(c) There is significant difference between the reading performance of students taught using metacognitive processing strategies and conventional</p>

students (-12.99333 and -12.54000 respectively).

(d) At the end of the treatment (phase III), a low comprehension processing achiever from the metacognitive group was able to process the passage and answer a question interpretively.

2. What is the difference between the reading performance of students taught using metarepresentational and conventional comprehension processing strategies? There is significant difference between the reading performance of students taught using metarepresentational and conventional comprehension processing strategies.
- (a) There is difference between the scores of metarepresentational processing strategies group and conventional in reading comprehension across phases.
- (b) Metarepresentational group had fewer number of low scores at the end of the treatment (phase III) than the conventional group (see Table 4.03). Middle scores of metarepresentational group increased, while only few managed to fall within the middle range score (34 to 66%) among the conventional group. High range scorers performed better than the conventional group. This confirms that significant difference exist between students taught using metarepresentational processing strategies and

conventional reading comprehension, in favour of metarepresentational.

(c) Computation of scores of metarepresentational and conventional groups buttressed that significant difference existed between the reading performance of students taught using metarepresentational processing strategies and conventional ways of reading comprehension (see table 4.32).

(d) Movement of metarepresentational group's low achievers (1 to 33%) to middle range score (34 to 66%) suggests clear difference between metarepresentational and conventional group. The conventional group did not have such significant movement. Deep understanding processing strategy instigated the change in metarepresentational group's reading comprehension performance which (the strategy) conventional group did not have.

3. Which processing Metarepresentational strategy has more processing strategies had

a. Metarepresentational

impact on students' more impact on students'
reading reading comprehension
comprehension performance
processing
performance?

comprehension processing
strategies improved students'
reading comprehension
processing performance
predominantly at critical level
at phase III. Comparatively,
metacognitive group had same
average score 3.29, however,
the number of the higher
achievers was fewer than that of
metarepresentational group.

- b. High, middle and lower score
achievers of
metarepresentational group
performed higher at critical
level than metacognitive and
conventional groups. Middle
level scorers performed higher
at inferential level of
comprehension than
metacognitive and conventional
groups. Lower level scorers
performed better at interpretive

level than metacognitive and conventional groups (see Table 4.08).

- c. The metarepresentational group progressed better in reading comprehension processing than metacognitive group and conventional group. The mean score of metarepresentational group showed that students' reading comprehension processing in metarepresentational group was better than the metacognitive and conventional groups (see Table 4.08).

- 4. On which level of Metarepresentational reading comprehension processing comprehension strategies had more impact performance does the on critical level of reading strategy impact the comprehension more?

4.12 Discussion of Findings

The major finding and sub-findings show that there is significant difference between the reading performance of students taught using metacognitive and conventional comprehension processing strategies in favour of metacognitive processing strategies students. They also confirmed the view of Proust (2007) and Flavellis (1979) because metacognitive processing strategies of reading comprehension enhanced students

reading performance. However, the finding disconfirmed Freyal's (2008) because certain metacognitive strategies such as *evaluation* only worked for the high achievers, *using background knowledge* worked for the low achievers. The strategies that made the difference in the performance are *evaluation, using personal reading strength* and using background knowledge.

The strength of the finding is that it shows how comprehension processing involves cognitively conscious appraisal and strategies that need efforts, instructional attention, training and development reading comprehension learners. A weakness of the finding relates to the possibility that metacognitive processing strategies employed by the students restricted their comprehension within the context of the text alone. This in turn may have been the reason for metacognitive students' correct response to literal questions (moderate level scores). The finding evoked surprise as it indicated that metacognitive comprehension processing supported Van Dijk and Kinstch's (1983) idea that comprehension is cyclic (what you know influences what you see as what you see influences what you know). However, it shows that reading comprehension is not only cyclic, but also participatory. The writer prompts the reader to use appropriate processing strategies through certain writer intention clues by calling attention to these clues the researcher figures out what writer wants to mean. These clues are only processed through the use of certain metacognitive or metarepresentational strategies. This is one of the reasons why the conventional group were not able to perform well in reading comprehension.

New grounds broken lies in the area of reading comprehension processing. It established that metacognitive processing strategies of reading comprehension are

instrumental to cognitive processing since they involve mental planning, monitoring and evaluation of reading comprehension processes. This turned out to boost students' reading performance. Video instrumental analysis of students' comprehension processing strategy used further buttresses this fact (see video and audio CD plates attached). The finding revealed a surprising contrast among reading developments of low, middle and high achievers of metacognitive group.

The second major finding and sub-findings reveal that significant difference taught using metarepresentational and conventional comprehension processing strategies in favour of metarepresentational group. This differs from Olaofe and Mesembe's view because theirs was concerned with potency of structural patterning of discourse comprehension and not metapresentational processing strategies. The finding also differed from Van Dijk and Kinstch's (1983) which is based on situation model of discourse comprehension and metarepresentational processing involved in creation of situation made by the reader. As observed in the present study in reading comprehension. The strategies that made the difference in the performance are *complex understanding* and *deep understanding* .

In that case, understanding a text at the five levels of reading comprehension is demonstrated below:

Critical Comprehension	Comprehension goes beyond a mental operation that stops at the linguistic presentation (word, phrase and sentences). It relates to metarepresentation of situation constructed from the text and judging it. Failure to critically comprehend a text results from failure to metarepresent the
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situation figured out by the reader from the text and judge it.

Inferential Comprehension Text materials are inferentially comprehended based on metarepresenting the situational model the reader created from it. The metarepresented situation model then provides the basis for further cognitive operations, especially inferencing, involving finding meaning beyond the linguistic representation in the text.

Reorganization Organizing scattered information in a single text may be done differently by readers. Re-writing the story in an organized way involves construction and metarepresentation of the situation constructed from the text rather than the structural arrangement of the jumbled text.

Literal Linguistic or textbase comprehension relates to metarepresenting particular cues from the text.

Interpretive Interpretive level of text comprehension surpasses text presentation level (words, phrases and sentences). It is at the level of metarepresentational situation models constructed by the reader.

The strength of the finding relates to the fact that metarepresentational strategies enhance students' capacity for expansive thinking during reading comprehension processing. Overall new grounds broken by the finding is that comprehension is not

only restricted to mental construction of situation model from the reading material. It also involves strategic metarepresentation of such construction at surface, deep or complex level during reading comprehension to achieve critical, inferential, literal, interpretive and reorganizational level of comprehension.

The third major finding and sub-findings show that metarepresentational comprehension processing strategies had more impact on students' reading comprehension performance. They also disconfirmed Frayal's (2008) because metarepresentational comprehension strategies enhanced students' reading performance better than metacognitive strategies. The findings confirmed Recanati's reanalysis theory that states reader's review of surface meaning of decoded text to achieve further meaning. The strategies that made the difference in students' performance are deep and complex understanding.

The strength of the finding lies in the fact that metarepresentational strategies (especially deep and complex understanding strategies) belong to a set of process that links the reader, the writer and the context to the creation and comprehension of meaning during reading. The overall new grounds broken relates to the conclusion that deep and complex meaning understanding metarepresentational strategies provide high-order understanding and performance in reading comprehension. Surface understanding strategy develops literal presentation and identification of a text's basic proposition.

The last finding says that metarepresentational strategies impacted more on the critical level of reading comprehension. Table 4.32 indicated that 44 out of 138 score counts tilted towards critical comprehension from the category of the high comprehension performers of the metarepresentational group. It was the highest score

count. This indicated that metarepresentational strategy accounts for enhancing critical level of reading comprehension followed by inferential with 34 score counts. The finding had to do with the functional elements of metarepresentation: holistic and reflexive disposition. This promoted the students' critical evaluative thinking by processing text material based on the context of the text, writer intention and global context. It was further confirmed by inferential level as the second highest score count (Table 4.32). The students' development of critical and inferential thinking process was based on holistic pattern, such as top-down processing of the text. Of course, it is holistic inferencing and critiquing that is more characteristic of what people do and are required to do in real world reading.

The finding responded to Hill's (1992) challenge that comprehension strategies needed to develop students' inferential capacity should be researched. The present study has shown that students' critical and inferential reading abilities could be developed through the use of complex and deep meaning understanding metarepresentational strategies. The study appear to run contrary to Frayal's (2008) that metacognitive processing boosts critical processing ability. Students' use of *deep* and *complex meaning understanding* metarepresentational strategies countered Frayal's (2008) conclusion. The study confirms Gracai's (2000) that pragmatic comprehension associated with metarepresentational capacity can enhance students' critical comprehension capacity. The strength of the finding is it revealed how critical comprehension level is enhanced by students' being able to process text materials by using *complex understanding* and *deep meaning understanding* metarepresentational processing strategies.

The surprise in the finding is that the result went contrary to the expectation that metarepresentational treatment would have more impact on the interpretive level of reading comprehension because of its sensitivity to context: it did not (see Table 4.34). A new ground broken by the study relates to the revelation that critical comprehension is triggered by *complex understanding* metarepresentational processing strategy which promotes students' capacity to deeply process and understand information across contexts.

4.13 Summary

In this chapter, the study used descriptive and inferential statistics for the analysis of data collected. This was followed by qualitative analysis of the data based on three phases of subjects' treatment (Phases I, II and III).

Four hypotheses were tested which eventually answered the four research questions for the study. The first finding of both the quantitative and qualitative data analyses opposed the first hypothesis by revealing that there was significant difference between the reading performance of students' taught using metacognitive and conventional comprehension processing strategies. The second finding, in the same vein, opposed the second hypothesis by indicating that there was a significant difference between the reading performance of students taught using metarepresentation and conventional comprehension processing strategies. Hypothesis three was not confirmed by the third finding which revealed that metarepresentational strategy of comprehension processing had more impact on students' reading performance. The last finding (4) showed that metarepresentational strategies of reading comprehension had more impact

on the critical level of reading comprehension performance of the subjects, thus disconfirming hypothesis 4.

Overall, data analysis, both qualitative and quantitative, proved that the two treatments (metacognitive and metarepresentational) had a significant impact of students reading comprehension performance. This was the reason for the higher performance of the two treatment groups than the conventional group.

Table 4.39 presents summary of metacognitive and conventional processing strategies that students used in reading comprehension.

Table 4.43: Summary of Metacognitive and Conventional Processing Strategies that Students Used in Reading Comprehension

Reading Comprehension Skill	Metacognitive Processing Strategies	Sample Data	Conventional Processing Strategies	Sample Data
Literal	Using personal reading strength strategy	<p>Q:- State two factors that facilitate success</p> <p>Ans: <i>A man born lucky</i> - If one have determination. The student used his personal reading strength to locate points.</p>	Wrong literal processing (copying from text)	Ans: <i>Never give in</i>
Inferential	Using background knowledge strategy	<p>Q: What do you think was the writer's feeling?</p> <p>Ans: <i>Different pains make it difficult</i> The respondent used his experience of pains and illness to relate to the passage.</p>		Ans: <i>The way young people find out that they have the disease may be diagnose by chance.</i>
Critical	Evaluation	<p>Q: From what you have read, why do you think the disease is curable or not?</p> <p>Ans: <i>You can treat the disease because there is treatment medicine for it.</i> The student used evaluating strategy to gather information from the passage and evaluate the curable status of the disease.</p>	Direct copying from text	Ans: <i>This is possible because whenever somebody's blood glucose goes above the diabetic line.</i>
Interpretive	Using background knowledge strategy	<p>Q: What did the writer perceive as his first duty and how did he accomplish it?</p> <p>Ans: <i>To bring more uniform, motors, guns and to make soldiers friend in themselves</i> Possible underlining of stated problems in the passage and relating them to his knowledge of ways of solving such problems.</p>	Direct copying from text	Ans: <i>My first task was that of restoring mutual confidence and trust among the soldier and between the soldiers and civilliance</i>

Reorganization	Reading goals	<p>Q: Did the writer easy explain the factors responsible for success?</p> <p><i>Ans: The writer easily explain it. He did say that for one to be successful in life he/she needs to be determination.</i></p> <p>The student searched his reading goal and located the answer by organizing the facts, using reading goals strategy.</p>	<p>Direct copying from text</p> <p><i>Ans: The writer is good one.</i></p>
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Table 4.44 presents summary of metarepresentational and conventional processing strategies that students used in reading comprehension.

Table 4.44: Summary of Metarepresentational and Conventional Processing Strategies that Students Used in Reading Comprehension

Reading Comprehension Skill	Metacognitive Processing Strategies	Sample Data	Conventional Processing Strategies	Sample Data
Critical	Complex Understanding Strategy	<p>Q: From what you have read, do you think the disease can be cured? Justify reasons for your answer.</p> <p><i>Ans: Yes the disease can be cure because doctors treat old people that suffer the sickness with giving them tablet and ask them to eat small carbohydrate food.</i></p> <p>The respondent critically concluded the possibility of curing the disease by exploring hidden facts from the passage, using complex understanding strategy.</p>	Direct copying from text	<p><i>Ans: In either case, however, it is necessary for the patience to monitor his urine regular to know how well he us responding.</i></p>
Inferential	Deep meaning understanding strategy	<p>Q: Why is it difficult for doctors to diagnose the disease in children?</p> <p><i>Ans: The disease is difficult, it confuses doctors to find</i></p> <p>The student thought deeply and arrived at word “confusion” as the basis for the difficulty.</p>	Guessing the answer	<p><i>Ans: The illness diagnose among the elderly while treated.</i></p>
Interpretive	Surface meaning of processing reading comprehension strategy	<p>Q: Why is it difficult for doctors to diagnose the disease in children?</p> <p><i>Ans: The disease is difficult, it confuses doctors to find.</i></p> <p>The answer was stated in the passage and the student understood it literally thereby stating vividly.</p>	Guessing the answer	<p><i>Ans: The disease is dangerous.</i></p>
Literal	Surface understanding processing strategy of reading comprehension	<p>Q: State two factors that facilitate success.</p> <p><i>Ans: Man’s will to succeed</i></p> <p>The respondent brought out a clear point from the passage, using surface meaning.</p>	Guessing the answer	<p><i>Ans: Determination</i></p>

Table 4.45: Differences between Conventional Strategy and Metacognitive/Metarepresentational Strategy Development in Reading Comprehension Processing Lesson

Traditional Strategy	Metacognitive Strategy	Metarepresentational Strategy
Background Knowledge	Background Knowledge	
Activating learners background knowledge before reading commences before processing the text.	Explicit drawing of learners' attention to relate their background knowledge with what they are reading simultaneously – on-line.	Learners are made to understand the surface meaning of expression
Teacher sorts difficult words and explain them.	Teacher asks students to underline difficult words and encourages the learners to suggest other words that can be used to get the meaning of sentence.	Learners are made to underline difficult words in the passage. They are encouraged to use context to derive meaning of the words.
Teacher asks learners to answer questions on the passage.	Teacher leads the learners to find what the writer wants to convey using their background knowledge.	Teacher leads the learners to bring out what the writer wants to communicate at surface deep and complex levels.
Teacher collects students' scripts for marking.	Learners are led through questions by teacher to practice figure our meaning. Teacher are given questions so that they can answer them as they use background knowledge to understand the passage.	Learners are asked questions on the passage. Answers are graded based on their corresponding response to surface, deep or complex meaning.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter summarizes the study and draws implications of the findings for stakeholders in teaching and learning of English Language. It further provides recommendations, discusses the limitation of the study, and suggests areas for further studies.

5.1 Summary of the Findings

The study compared the impact of metacognitive and metarepresentational processing strategies of students' English reading comprehension using three secondary schools. It was based on the need for an empirical study that would guide teachers to teach and test reading comprehension. This is because teachers at secondary school level do not teach reading comprehension or teach it without the knowledge of the processes involved. In virtue of this, the following research questions were raised.

- (1) What is the difference between the reading performance of students taught using metacognitive and conventional comprehension processing strategies?
- (2) What is the difference between the reading performance of students taught using metarepresentational and conventional comprehension processing strategies?
- (3) Which comprehension processing strategies have more impact on students' reading comprehension performance?
- (4) On which reading comprehension level do the strategies have more impact?

To answer the research questions stated above, a pre-test was given to the sampled students who were grouped into two treatment groups (metacognitive and

metarepresentational) and a control group. The metacognitive group received metacognitive strategies of comprehension processing treatment for 12 weeks, while the metarepresentational group received metarepresentational strategies of comprehension processing treatment for the same period. The control group continued with normal way comprehension lessons allocated in the time table for the same period. At the end of the treatment period, the following findings were obtained:

- (1) There is significant difference between the reading performance of students taught using metacognitive and conventional comprehension processing strategies in favour of metacognitive processing strategies students.
- (2) There is significant difference between the reading performance of students taught using metarepresentational and conventional comprehension processing strategies in favour of metarepresentational processing strategies students.
- (3) Metarepresentational comprehension processing strategies had more impact on students' reading comprehension performance than those of metacognitive and conventional.
- (4) Metarepresentational comprehension processing strategies had more impact on critical level of reading comprehension than the other levels of reading comprehension.

5.2 Implications

Based on the findings obtained from the present study, implications relating to metacognitive comprehension processing strategies and metarepresentational comprehension processing strategies are discussed. These include: implications for metacognitive comprehension processing ability, for metarepresentational

comprehension processing ability, for teachers of English reading comprehension across educational levels and implication for educational administrators and curriculum developers.

5.2.1 Implication for Metacognitive Comprehension Processing Ability

The present study revealed that metacognitive processing ability had significantly positive impact on students' reading comprehension performance. This accounted for their superior reading comprehension development as compared with the conventional reading comprehension processing strategies. It showed development across the five levels of reading comprehension with better performance on critical level of comprehension.

By deliberate instructional efforts, students could be encouraged to use different metacognitive strategies in comprehending a text material across contexts. This could be done by using the P. P. P. E. E procedure = Preparation, Presentation (of the strategy) Practice (guide by teacher) Evaluation (of the success of the strategy) and Expansion (making the students use the strategies in different reading contexts) to teach metacognitive strategies of reading comprehension. The present study has moved metacognitive comprehension forward by establishing that metacognitive processing strategies such as *evaluation* which instigates critical processing and *use of background knowledge* that provokes interpretive processing enhance students reading comprehension performance.

5.2.2 Implication for Metarepresentational Comprehension Strategies

Metarepresentational comprehension processing strategies, as shown by the finding of the present study, accounted for the students' improvements in their reading

comprehension performance as compared with the conventional comprehension processing strategies. *Complex understanding* metarepresentational processing strategies also impacted more on students' reading performance than the metacognitive in critical and inferential comprehension processing. This is because metarepresentational strategies facilitate expansive processing. It also shows that the strategies developed students' text comprehension needed for present day knowledge society. Metarepresentational strategies (surface, deep and complex) understanding should be taught across institutions of learning. *Complex understanding* enhances critical processing of text material.

5.2.3 Implication for Teaching Reading Comprehension across Institutions of Learning

Both metacognitive and metarepresentational strategies of reading comprehension processing are capable of developing reading comprehension processing abilities. Metacognitive strategies that had more impact on students' reading comprehension are: *evaluation strategies, using background knowledge, using personal reading strength, reading goal and guessing later topic*. Metarepresentational strategies impacted on student reading comprehension in this order: *complex understanding, as in critical and inferential level of reading comprehension processing, deep meaning understanding, as in inferential, interpretive and reorganizational reading comprehension. Surface meanings had more strength in literal comprehension*. All the strategies can be taught using the PPPEE procedure in chapter three.

Surface understanding should be taught at the beginning of comprehension lessons. After that, deep meaning understanding should follow so that a link between the two

strategies can be made clear to students. More time can then be spent in teaching students *complex understanding* of metarepresentational strategy than teaching *deep and surface understanding* strategies.

5.2.4 Implication for Teachers of Reading Comprehension across Educational Institutions

Very fundamental to any educational attainment is comprehension. Teachers are therefore, faced with the task of equipping learners with the skills and strategies for achieving good reading comprehension among learners of English and other languages. This skill remains a difficult task to handle. For long, no solution has been found regarding helping learners with a tool to read, process, understand and deeply and meaningfully critique text materials. The present study has now provided the learners with the strategies necessary for reading comprehension processing. These strategies are the tools for metacognitive and metarepresentational reading comprehension processing. They can be taught by the teacher using PPPEE procedure.

Table 5.1 presents metacognitive processing strategies in reading comprehension.

Table 5.1: Metacognitive Processing Strategies in Reading Comprehension Classroom

Metacognitive Strategy	Application in Reading Comprehension Classroom
Using Background Knowledge	Encourage, by leading, the learners to activate some knowledge or personal experiences regarding the topic of the passage to be read. This will prompt the activation of the word or phase at a high level for further interpretation. For example, using the passage “Our Distant Relative, The Whale” in Intensive English 2 course book, the teacher can encourage the students to activate their experience or knowledge on fish and their kinds in water. This could make them adapt the experience to further interpret what the writer is trying to mean by <i>Our Distant Relative the Whale</i> .
Using Personal Strength	Getting students to find diagrams, figures or pictures that represent some idea about what the passage is trying to portray. This can help poor readers, while good readers can be encouraged to focus on the structures of the text for meaning realization.
Evaluating	Explaining how a reader could evaluate the ways the passage contributes to his knowledge. An interplay between the general knowledge and local processing of the expression can be explained to the learners which will reveal new knowledge gained. For example, the title of a passage

	<p>“Housing Problem in Nigeria” in Intensive English 2 Course Book can be understood by the learners if the teacher inspires them to think about housing system, then makes them adapt what they think about housing in their real life situation to comprehend the text. As the learners read the passage they can evaluate whether or not the passage contribute to their knowledge of life generally.</p>
<p>Searching according to the reading goals</p>	<p>Guide the readers to search for relevant information related to their reading goals. Is it skimming, scanning or looking for a particular information. For example, what are the causes of housing problem in Nigeria, the time the problem started or the solutions offered by the writer.</p>

Table 5.2 presents metarepresentational processing strategies in reading comprehension.

Table 5.2: Metarepresentational Processing Strategies in Reading Comprehension Classroom

Metarepresentational strategies	Application in reading comprehension classroom
Surface Meaning Understanding	<p>Get learners to establish a local conceptual representation of discourse expressions. By doing this, learners are encouraged to conceptualize facts in a possible world at sentence level and specific collection of facts at discoursal level. For example, in a sentence like, <i>Housing is certainly one of the basic necessities of man</i> could be used to make learners realize the idea of housing in Nigeria, which is a real life problem. This will make learners construct the surface meaning based on the textual representation of fact.</p>
Deep Meaning Understanding	<p>Lead students to reorganize and construct meaning beyond textual representation. Learners' attention is drawn to the realization that surface meaning may not be the only meaning meant by the writer of an expression. For examples, in the same passage, the writer is said to be expressing his opinions about housing problems in Nigeria such as: it is a human necessity, housing problem started in the 1970s, emigration etc. which can indicate the writer's positive or negative attitude towards the housing situation in Nigeria.</p>
Complex Meaning Understanding	<p>Encourage the learners to generate high conceptual meaning. Learners are made to identify the communicative goal of text by figuring out higher level ideas such as speech acts and actions. For example, the students can be led to figure out why the writer expressed his views about housing in Nigeria through such question as why did they write the passage? What is the attitude of the writer about housing in Nigeria? Do you agree or disagree with the writer? Why?</p>

5.2.5 Implication for Educational Administrators and Curriculum Developers

Metacognitive and metarepresentational strategies of reading comprehension should be included in any material selection and adoption. This could be done by ensuring that all reading comprehension texts encourage students to develop their metarepresentational ability. Teaching and learning of reading comprehension could be based on the employment of metarepresentational and metacognitive strategies. Materials that would help learners explore their metarepresentational and metacognitive potentialities could be selected and endorsed by the educational administrators and curriculum developers. Schools, teachers and administrators need to expose the gains of developing metarepresentational and metacognitive abilities of students in text comprehension. Such gains include: boosting students' critical, interpretive, inferential, literal and reorganizational comprehension performances and competencies.

5.2.6 Integration of Metacognitive and Metarepresentational Processing Strategies for Effective Teaching of Reading Comprehension

This section recommends ways of integrating metacognitive and metarepresentational strategies in reading comprehension instruction.

Table 5.3 presents integration of metacognitive and metarepresentational processing strategies for effective teaching of reading comprehension.

Table 5.3: Integration of Metacognitive and Metarepresentational Processing Strategies for Effective Teaching of Reading Comprehension

Aspects of Metacognitive Strategies Highly Profitable	Aspects of Metarepresentational Strategies Highly Profitable	Integration of the two Strategies	End Result for Effective Teaching of Reading Comprehension
Evaluation strategy: which brings out students' evaluation skills by determining how the passage contributes to their knowledge.	Complex meaning understanding strategy: which instigates students' judgment of the writer's position through figuring out why the text was written.	Both evaluation and complex meaning understanding processing strategies should be integrated in an instructional unit in order to achieve critical meaning generation.	Critical reading comprehension enhancement
Use of Background Knowledge: By getting the students to reflect on their experience in a passage could develop their reading performance.	Deep Meaning Understanding Strategy: that provokes probing questions to make students understand that the meaning of the passage goes beyond the word order to understand the text beyond linguistic meaning.	Using background knowledge and deep meaning understanding strategies should be integrated in one instructional unit in order to generate inferential and interpretive meanings.	Interpretive and inferential reading comprehension expansion
Using Personal Reading Strength: Strength by getting the students to use their ways of reading, for instance,	Surface Meaning Understanding Strategy: Which is achieved by reading the meaning of the text literally through	Use surface meaning understanding with using personal reading strength in one instructional unit to achieve literal	Effective meaning comprehension literal

understanding a point paying attention to comprehension.
 or looking at the linguistic form of text
 picture as they read material.
 the passage helped
 them understand the
 main point of the
 passage.

**Disguishing
 Information**

Strategy: Which can
 prompt students to
 realize that their
 experience about a
 particular issue in a
 passage help
 facilitate the
 understanding of the
 text.

**Deep Meaning
 Understanding**

Strategy: Provoked
 by probing questions
 to make students
 understand that the
 meaning of the
 passage goes beyond
 linguistic meaning to
 realize deep
 comprehension.

Combine deep
 meaning
 understanding with
 disguishing
 information strategies
 in one instructional
 unit to attain
 inferential and
 reorganizational
 comprehension.

Inferential and
 reorganization
 reading
 comprehension.

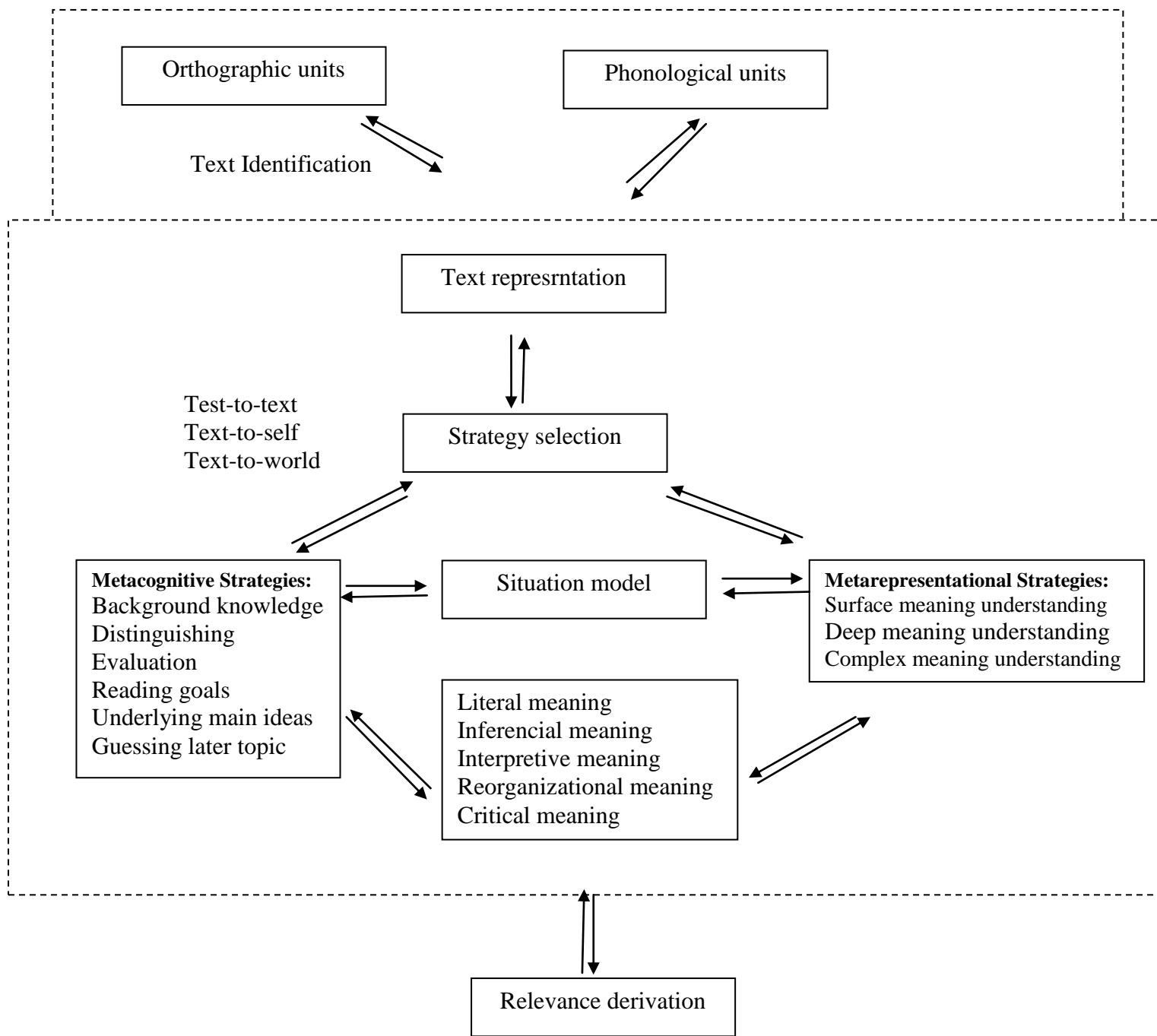


Figure 5.1: Strategic Reading Comprehension Processing Development Model (SRCPD)

Fig. 5.1 shows an integration of metarepresentational and metacognitive comprehension processing differentials which are found to be centred upon conceptual and perceptual based in metarepresentational and metacognitive reading comprehension processing respectively.

5.3 Conclusion

The study has been able to compare the impact of metacognitive and metarepresentational strategies on students' English reading comprehension performance. The findings revealed that both metacognitive and metarepresentational strategies had impact on students' reading performance. The study also found that metarepresentational treatment group performed better than metacognitive treatment group and the conventional group across the four levels reading comprehension. It was only at the literal level that metacognitive group performed better than metarepresentation. The study concluded therefore, that metarepresentational strategies instruction enhanced both teaching and learning of reading by developing students' comprehension processing abilities. Implication of the study for students, teachers, educational administrators, examining bodies and other stakeholders in language education research were presented.

5.4 Contributions of the Present Study

The study has been able to establish the positive impact of metacognitive process strategies on students' reading comprehension using multi-dimensional empirical approach of analysis. The impact spread across the five levels of reading comprehension; literal, inferential, critical, interpretive and reorganizational (see Table 4.22). Such impact was not found among the conventional reading comprehension procedure. Again, the study discovered that metarepresentational processing strategies *surface meaning understanding*, *deep meaning understanding* and *complex meaning understanding* boosted students' reading comprehension. Conventional reading comprehension procedure which involves asking the students to read a passage,

explaining difficult words and then asking them to answer questions on the passage did not result in good reading comprehension among students. (see Table 4.23)

The study found metarepresentational processing strategies to have more positive influence on students' reading comprehension than those of metacognitive at critical and inferential levels (see Table 4.25). The difference was due to contextual and holistic thinking activated by metarepresentational strategies but not metacognitive and conventional groups.

Top-down processing of text is useful in second language learning situation where students' linguistic abilities are limited. The study shows the strategies that can be used to develop specific reading comprehension skills. Another contribution of the study is it revealed that the general/conventional approach used to teach reading comprehension in many senior schools is not helpful and does not enhance critical reflective thinking.

Furthermore, the hierarchical order of the impact of metarepresentational processing strategies of reading comprehension levels, beginning with critical reading comprehension influenced by *complex meaning understanding* was followed by inferential level of comprehension boosted by *deep meaning understanding*. Reorganizational and interpretive levels of reading comprehensions were instigated by *deep* and *complex meaning understanding* metarepresentational strategies. Literal meaning comprehension was provoked by *surface meaning understanding*.

The study has also contributed to knowledge by producing a sample lesson for teaching reading comprehension using metarepresentational and metacognitive

strategies which is now available on CD. Furthermore, the study has brought the concept of metarepresentational and metacognitive strategies to the realities of secondary and possibly primary school teachers.

5.5 Recommendations

- (1) The present study recommends the inclusion of complex understanding and deep meaning metarepresentational processing strategies instruction in the teaching and learning of reading comprehension among secondary school students. The teaching and learning procedure used in the present study could be adopted (PPPEE). This will make students develop their reading comprehension performance not only when preparing for West African Examination and National Examination Council's examinations, but as lifelong readers.

A sampled curriculum package that integrates metacognitive and metarepresentational processing strategies for reading comprehensions has been developed in Table 5.5. This is relevant to students of reading comprehension because in language learning instruction, learners need sufficient processing inputs to interpret text by integrating main information at the linguistic interfaces (syntax-pragmatic, syntax-semantic). Thus, this study has illustrated how learners need to use available strategies to achieve comprehension processing competence and performance. Explicit teaching and learning of metacognitive and metarepresentational processing strategies helped students achieve the comprehension performance.

Table 5.4 presents a sample metacognitive processing strategies curriculum for senior secondary ii reading comprehension

Table 5.4: A Sample Metacognitive Processing Strategies Curriculum for Senior Secondary II Reading

Comprehension

Week	Unit	No. of Periods	Topic	Objective	Metacognitive Strategies	Teacher Activities	Students' activities	Instructional Material	Evaluation Technique
1 – 2	1	2	Literal meaning comprehension	Recognize and interpret literal meaning of written expressions	Using personal reading strength: underline new idea	Explains literal meanings to students	Underline names of places, persons or points.	Intensive English Book 2	Students answer questions that elicit literal meaning in group.
3 – 4	2	3	Inferential meaning comprehension	Construct and distinguish meaning not literally stated in the text	Using background knowledge: relate information with personal knowledge	Leads students figure out meaning not stated in the passage directly.	Bring out instances of such unstated meanings in the passage.	Intensive English Book 2	Probing questions that elicit inferential answers are given for students to answer in group.
5 – 6	3	2	Reorganization	Organize facts from different part of the text	Reading goals	Guides students to find out facts from the passage and show how they help in constructing meaning.	Students bring out and relate different facts from the passage to come up with meaning.	Intensive English Book 2	Individual students answer written questions that lead to deriving meaning from different ideas in a passage.
7 – 8	4	3	Interpretive meaning	To explain possible meaning of	Using background knowledge: draw	Teacher explains and provides examples of	Students provide more examples of some	Intensive English Book 2	Expressions are provided for students to

			comprehension	written expression	conclusion from personal knowledge	interpreting some expressions in a passage	interpretations using their background knowledge.		discuss and interpret in groups.
9 – 10	5	4	Critical meaning of comprehension	Construct critical meaning of discourse referent by drawing conclusions	Evaluation strategy	Guides students to construct critical meaning by leading them to pose questions and answer them on a passage.	Students apply same method using another paragraph to construct critical meaning.	Intensive English Book 2	A home work is given to students in which they are asked to critically evaluate a passage individually.
11	6	2	Revision	To construct different meanings in a passage critical, literal, inferential, interpretive on to reorganizational				Intensive English Book 2	

Table 5.5 presents a sample metarepresentational processing strategies curriculum for senior secondary ii reading comprehension

Table 5.5: A Sample Metarepresentational Processing Strategies Curriculum for Senior Secondary II Reading Comprehension

Week	Unit	No. of Periods	Topic	Objective	Metarepresentational Strategies	Teacher Activity	Students' Activity	Instructional Material	Evaluation Technique
1 – 2	1	2	Literal meaning comprehension	Construct text based meaning of written expression	Surface meaning understanding strategies	Introduces students to the idea of surface meaning as meaning based on form.	Students are guided to provide examples.	Intensive English Book 2	Students answer questions on a passage that elicit surface understanding individually.
3 – 4	2	3	Inferential meaning comprehension	To figure out writer's meaning beyond the literal	Deep meaning understanding strategy	Teacher guides students to figure out meaning beyond the surface one.	Students provide interpretations using inference	Intensive English Book 2	Questions on a passages eliciting deep meaning strategy are asked and students answer in group.
5 – 6	3	2	Critical meaning of comprehension	To reflect writer complicated meaning intention through finding implicative	Complex meaning understanding strategy	Students are guided by the teacher to make conclusions about a passage	Students ask themselves questions in achieving critical meaning	Intensive English Book 2	Complex understanding strategy is provided by asking students to generate opinion on a passage.
7 – 8	4	3	Interpretive	To recognize and explain possible	Deep meaning understanding strategy	Guides students in suggesting	Students use their global knowledge to	Intensive English Book 2	Questions that elicit use of global

				meaning communicate by the writer		possible meanings in a passage	interpret meaning.		knowledge by the use of deep meaning strategy are asked. Students work answers in group.
9 – 10	5	4	Reorganization		Deep meaning understanding	Teacher explains and leads students to understand how different facts are organized to achieve meaning	Students figure out meaning based on relationship of spread facts.	Intensive English Book 2	Students are given home work to reorganize different ideas in a passage to arrive at a general idea.
11	6	2	Revision	To construct different meanings in a passage critical, literal, inferential, interpretive on to reorganizational	Use the three metarepresentational processing strategies			Intensive English Book 2	Group work

5.6 Limitations of the Study

The present study mainly concerned itself with cognitive processing of text material. Emotional, motivational and other affective variable could not be prevented entirely. Again multimodal effects involving pictures could equally not be ruled out. The difference indicated that the treatments were effective over accident events. All the same, over-generalization based on a single study such as this one, limited to twelve (12) weeks, cannot be made.

5.7 Suggested Areas for further Studies

Notwithstanding the limitations of the present study, the method followed in the study can be employed to investigate the interaction of metacognitive and metarepresentational strength in reading comprehension processing. Another study can be undertaken to extend both metacognitive and metarepresentational strategies to the teaching and learning of writing.

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APPENDIX I

A Transcribed Sample Lesson for Metarepresentational Processing Strategies Weekly Instruction for Senior Secondary II Reading Comprehension

English Language

Reading Comprehension

Aim of the Lesson: To use surface meaning identification strategy to improve students' reading comprehension.

Resource: Using a passage *Housing Problem in Nigeria* from Intensive English Book 2

Starter	Whole class discussion of housing and types of housing	5 minutes
Teacher activity	Teacher explains surface meaning identification strategy in comprehension through some examples.	6 minutes
Students' activity	Students read the passage the housing problem in Nigeria silently	5 minutes
Stage 1	Students are asked to bring out difficult words encountered in the passage. Some of the words students found unfamiliar were: <i>rural-dwellers</i> , <i>surpass</i> , <i>cash-flow</i> . The teacher led the students to find the meaning of the words based on the context of the passage. Students figured how the writer used the words in order to express some ideas.	8 minutes
Stage 2	Students were encouraged to bring out the surface ideas of the text by asking them what the writer said plainly in the passage using paragraphs one and two.	4 minutes
Stage 3	Students were grouped and asked to bring out the plain ideas of the whole passage.	8 minutes
Stage 4	Students explained how the strategy of identifying surface meaning helped them understand the passage.	3 minutes
Stage 5	Students given homework by asking them to bring out more surface meaning in the passage.	2 minutes

English Language

Reading Comprehension

Aim of the Lesson: To use deep meaning identification strategy to improve students' reading comprehension.

Resource: Using a passage *Choosing a Career* from Intensive English Book

2

Starter	The class discussed the concepts of jobs, occupation such as farming, hairdressing, tailoring and arrived at the idea of career.	3 minutes
Teacher activity	Teacher introduces and explains deep and complex meaning strategies using examples in previous passages.	7 minutes
Students' activity	Students read the passage <i>chooisign a career</i> silently.	6 minutes
Stage 1	Students were asked to pick up unfamiliar words in the passage. These <i>included: unawareness, psychologically, alienated, sequence</i> . They were discussed with students to picture what the writer used them for in expressing ideas.	7 minutes
Stage 2	Students were led to bring out the deep meaning of the general message in paragraph one.	6 minutes
Stage 3	Students were grouped and asked to discern the deep meaning of paragraph 2	7 minutes
Stage 4	Students were led to realize how deep meaning strategy was used to figure out writer's intention.	3 minutes
Stage 5	Students were given individual home work through asking them to explain the intension of the whole passage.	2 minutes

English Language

Reading Comprehension

Aim of the Lesson: To use complex meaning identification strategy to improve students' reading comprehension.

Resource: Using a passage from Intensive English Book 2

Starter	Whole class discussion of job, occupation and career	3 minutes
Teacher activity	(1) Teacher introduces the idea of complex meaning and the way to identify it and apply it in understanding passage. (2) The teacher provides example from previously used passages – housing problem in Nigeria.	7 minutes
Students' activity	Students read the passage – <i>Our Distant Relative, the Whale</i> and tried to use complex meaning strategy to comprehend the passage by figuring out what the writing wants to express in the passage.	6 minutes
Stage 1	Students picked up difficult words – <i>assuredly, amphibians, mammalian, descendants</i> . Teacher led them to categorize the words under an umbrella meaning as used in the passage.	7 minutes
Stage 2	Students used complex understanding strategy to understand writer's intention in paragraph I.	6 minutes
Stage 3	Students are grouped to do the same using paragraph II and III	7 minutes
Stage 4	Home work was given, the whole intention and idea of the passage, paragraph by paragraph.	3 minutes

English Language

Reading Comprehension

Aim of the Lesson: To use deep meaning identification strategy to improve students' reading comprehension.

Resource: Using a passage *River Crossing* from Intensive English Book 2

Starter	Whole class discussion of river crossing. Students mentioned and explained certain jobs.	3 minutes
Teacher activity	Teacher explained deep meaning strategy of comprehension text material by using some examples.	7 minutes
Students' activity	Students read the passage <i>River Crossing</i> , observing what the writer wanted to express and then figured out why he expressed it.	6 minutes
Stage 1	Students picked up difficult words - <i>embarked, recruits, chaos, booty</i> . Teacher led them figure out the meaning of these words based on the passage.	7 minutes
Stage 2	Students were encouraged to bring out deep meaning of the paragraph.	6 minutes
Stage 3	Students were grouped to work out deep meaning in the paragraph 2 and 3.	7 minutes
Stage 4	Students explained how they found the strategies in comprehending the passage.	3 minutes
Stage 5	Students were given home work by asking them to locate the deep meaning in each of the paragraphs in the passage	2 minutes

English Language

Reading Comprehension

Aim of the Lesson: To use surface meaning identification strategy to improve students' reading comprehension.

Resource: Using a passage *Coping with Drought* from Intensive English Book 2

Starter	The class discussed rainfall season: shortage and sufficiency leading to the discussion of drought.	4 minutes
Teacher activity	Teacher brings out the surface meaning of main ideas in paragraph one of a previously read passage with sufficient explanations.	4 minutes
Students' activity	Students read the passage <i>coping with drought</i> silently.	5 minutes
Stage 1	Students brought out different words such as <i>invokes, phenomenon, implication, occurrence, staple</i> . The words were discussed and explained within the context of the text.	7 minutes
Stage 2	Students were encouraged to explain the surface meaning of the ideas presented in paragraph one.	7 minutes
Stage 3	Students were grouped and asked to identify the surface meaning of paragraph II and III.	7 minutes
Stage 4	Students explained how they understood the passage based on the use of the surface meaning strategy	3 minutes
Stage 5	Students were asked to individually identify and explain the surface meaning of the whole passage.	2 minutes

English Language

Reading Comprehension

Aim of the Lesson: To use complex meaning strategy to improve students' reading comprehension.

Resource: Using a passage *Spaceship Earth* from Intensive English Book 2

Starter	Whole class discussion of planets with a focus on earth.	4 minutes
Teacher activity	Teacher explains the complex meaning of ideas discussed in paragraphs two and three of the preceding passage <i>coping with drought</i> and introduced the new passage <i>Spaceship Earth</i> .	4 minutes
Students' activity	Students read the passage <i>Spaceship Earth</i>	5 minutes
Stage 1	Difficult words such as <i>automobile, integrally-designed, fundamental, infinite</i> were sorted by students and discussed.	7 minutes
Stage 2	Teacher led students to bring out the complex meaning of the writers points in paragraphs I and II.	7 minutes
Stage 3	Students worked in groups to find the complex meaning analyzable in paragraphs IV and V.	7 minutes
Stage 4	Students were encouraged to bring out the whole complex meaning of the passage	5 minutes

English Language

Reading Comprehension

Aim of the Lesson: To use deep meaning strategy to improve students' reading comprehension.

Resource: Using a passage *Spaceship Earth* from Intensive English Book 2

Starter	The teacher led the students to discuss human skin, color and types.	4 minutes
Teacher activity	Teacher explained the deep meaning of the ideas of a previously treated passage <i>Spaceship Earth</i> and then introduced deep meaning to be realized in a new passage <i>The Skin</i> .	4 minutes
Students' activity	Students read the passage <i>The Skin</i> silently.	5 minutes
Stage 1	The words <i>delicate, pigmentation, responsive, regulate, shield</i> , were sorted by students and their meaning were found in groups based on the text.	7 minutes
Stage 2	Students were led to use deep meaning strategy to understand what the writer wanted to express in paragraph one.	7 minutes
Stage 3	Students were encouraged to use the strategy to understand the meaning communicated in paragraphs two and three.	5 minutes
Stage 4	Home work was given individually. Students were to use complex meaning strategy to find out what the writer wants to communicate in the whole passage.	3 minutes

English Language

Reading Comprehension

Aim of the Lesson: To use surface and deep meaning strategy to improve students' reading comprehension.

Resource: Using a passage *SS Burgeo* from Intensive English Book 2

Starter	Discussion of ship was done by the whole class.	4 minutes
Teacher activity	The teachers discussed the surface and deep meaning strategies to understanding the previously read passage <i>The Skin</i> . He then introduced the new passage <i>SS Burgeo</i> and the use of complex understanding strategy to understand the passage.	4 minutes
Students' activity	Students were asked to read the passage <i>SS Burgeo</i> silently.	5 minutes
Stage 1	The words: <i>anachronism</i> , <i>scrambled</i> , <i>dowdy</i> and <i>monument</i> were discussed among students in groups.	7 minutes
Stage 2	The students identified the writer's meaning of the first two paragraphs using complex understanding strategy.	7 minutes
Stage 3	The teacher led the students to identify writers meaning of paragraphs III and IV using complex meaning strategy.	7 minutes
Stage 4	Students were asked to find whole meaning of the passage using complex understanding strategy as home work.	3 minutes

APPENDIX II

Transcribed Sampled Lessons for Metacognitive Processing Strategies Weekly Instruction for Senior Secondary Schools Reading Comprehension

English Language
Reading Comprehension

Aim of the Lesson: To use searching according to *reading goal* strategy to comprehend a passage.

Resource:

Starter	The teacher discussed with the class ship, types of ship and their importance.	4 minutes
Teacher activity	Teacher explained <i>searching for reading goal</i> strategy as searching out information relevant to one's reading goals with examples.	4 minutes
Students' activity	Students read the passage <i>SS Burgeo</i> silently.	5 minutes
Stage 1	Difficult words like anachronism, dowdy, monuments were discussed in the class.	7 minutes
Stage 2	Students read paragraph one again with the aim of searching for relevant information they wanted.	7 minutes
Stage 3	Students practised the strategy using paragraphs two and three of the passage.	7 minutes
Stage 4	Students answered questions on the passage such as, what brought Burgeo's life to an end? How did the Burgeo show that she still had some life in her at the end?	3 minutes
Stage 5	Students were asked to identify their reading goal for the passage and how it helped them understand the passage, as homework in groups.	2 minutes

English Language

Reading Comprehension

Aim of the Lesson: To use *evaluation* as reading comprehension strategy to understand the passage.

Resource:

Starter	The teacher led the students to discuss the human skin, color and type.	4 minutes
Teacher activity	Teacher explained <i>Evaluating</i> as a comprehension strategy in which students determine whether a passage contributes to their knowledge or not, as they read on.	4 minutes
Students' activity	Students read the passage <i>The Skin</i> silently.	5 minutes
Stage 1	Students picked up difficult words such as <i>pigmentation, responsive, shield and delicate</i> . The words were deleted so that changes in grammar were noticed and other words were supplied.	7 minutes
Stage 2	Students read paragraph one again and evaluated the contribution of the paragraph to their knowledge.	7 minutes
Stage 3	Students worked in group to determine new knowledge gained from paragraphs II and III.	7 minutes
Stage 4	Students discussed how evaluating strategy helped them in understanding the passage.	3 minutes
Stage 5	Students were asked to answer questions such as how does the skin regulate body temperature? Why is the skin an important sensitive organ in the body?	2 minutes

English Language

Reading Comprehension

Aim of the Lesson: To use background knowledge strategy to comprehend the passage *Spaceship Earth*.

Resource: Intensive English Book 2

Starter	Whole class discussion of planet and astronomy.	4 minutes
Teacher activity	The teacher explained the use of background knowledge as strategy to comprehend a passage. This is done through questions such as what do you know about the planet earth?	4 minutes
Students' activity	Students read the passage <i>Spaceship Earth</i> silently.	5 minutes
Stage 1	Difficult words such as <i>automobile</i> , <i>thermodynamic</i> , <i>infinite</i> were discussed through replacement of the words with other appropriate ones.	7 minutes
Stage 2	Students used their background knowledge to answer some questions on paragraph one such as what does the earth seem to be like?	7 minutes
Stage 3	Students worked in group to use their background knowledge strategy to understand the passage and answered questions on paragraphs II and III.	7 minutes
Stage 4	Students discussed how background knowledge strategy helped them understand the passage.	3 minutes
Stage 5	Students were asked to individually bring out the main idea of each paragraph of the whole passage.	2 minutes

English Language**Reading Comprehension**

Aim of the Lesson: To use background reading strength strategy to comprehend a passage.

Resource: Intensive English Book 2

Starter	The class were led to activate their experience with rainy season by general discussion of sufficiency and shortage of rainfall.	4 minutes
Teacher activity	The teacher led the students to identify the personal techniques they use in finding meaning of passage such as underlining discovered idea, reflecting on the picture on the passage etc. and explained them as good reading strategies.	5 minutes
Students' activity	Students read the passage <i>coping with drought</i> and brought out difficult words.	7 minutes
Stage 1	Students were asked to suggest other words that could derive meaning of the difficult words.	7 minutes
Stage 2	The teacher encouraged students to use their personal reading strength to understand the passage.	5 minutes
Stage 3	Students were asked questions such as "what are the main ideas in the passage <i>coping with drought</i> ?"	5 minutes
Stage 4	Students responded to questions on how the strategy helped them in reading group.	4 minutes
Stage 5	Students were asked to use the strategy to answer the questions: What measures did the writer suggest to tackle drought problem? What are the consequences of drought?	3 minutes

English Language

Reading Comprehension

Aim of the Lesson: To use guessing later topic to understand a passage.

Resource: Intensive English Book 2

Starter	The teacher led the class in discussing housing system in Nigerian communities.	4 minutes
Teacher activity	The teacher introduced guessing later topic as a strategy for understanding a passage with examples.	5 minutes
Students' activity	Students read the passage <i>Housing Problem in Nigeria</i> silently.	5 minutes
Stage 1	Students picked up difficult words such as, <i>fluctuation, abrogated, exacerbated and cardinal</i> . Students were assisted by the teacher to replace the words with other suitable ones.	7 minutes
Stage 2	Students tried to guess what the next topic would be such as food problem in Nigeria, agricultural problem in Nigeria and electricity problem in Nigeria.	7 minutes
Stage 3	Students were referred to previous passages studied and asked to guess later topics to them.	7 minutes

English Language

Reading Comprehension

Aim of the Lesson: To use Distinguishing strategy to understand a passage.

Resource: Using a passage *The River Crossing* from Intensive English Book

2

Starter	The teacher led the class in discussing water, water channels and river	4 minutes
Teacher activity	The teacher introduced distinguishing strategy in reading comprehension. He explained the strategy to mean the ability to separate what one already knows from what one learns newly in a passage. The teacher provided examples.	5 minutes
Students' activity	Students read the passage <i>The River Crossing</i> .	7 minutes
Stage 1	Students picked up difficult words. The words' meanings were provided by students.	7 minutes
Stage 2	Students discussed new information gained from the paragraphs one and two.	7 minutes
Stage 3	Students practised the strategy using paragraph four and five again.	5 minutes
Stage 4	Students explained how the strategy helped their understanding of the passage.	3 minutes
Stage 5	Students were asked to bring out all the new information they gained from the passage as homework.	2 minutes

English Language

Reading Comprehension

Aim of the Lesson: To use *reading goal* strategy to understand a passage.

Resource: Using a passage from Intensive English Book 2

Starter	Whole class discussion of job, occupation and then the idea of career.	4 minutes
Teacher activity	Teacher introduced the idea of reading goals by indicating that a reader evaluates whether what he reads is relevant to his reading goals or not. Teacher provided example.	5 minutes
Students' activity	Students read the passage <i>Choosing a Career</i> from Intensive English book, silently.	7 minutes
Stage 1	Students picked up difficult words. The words were deleted from their position so that students with teacher's guide found replaceable words.	7 minutes
Stage 2	Students tried to find out the relevance of what they read to their reading goals such as educative goal in paragraph one.	5 minutes
Stage 3	Students worked in group to evaluate the relevance of what they read in paragraphs two and three to their reading goals.	5 minutes
Stage 4	Students discussed how the strategy helped them understand the passage.	4 minutes
Stage 5	Whole class homework was given by asking the students to find out what information was relevant to their reading goal in the whole passage.	3 minutes